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Our Readers' Messages

IT is supposed to be a reward of age that it acquires an equability of temperament which permits it to receive praise with modesty and criticism without despondency. We should require more than our hundred years were we to read quite unmoved the many messages of congratulation of which we publish a first selection this week, the more so in that the voice of the critic is almost wholly absent. But we do assure our readers that their generous commendation is valuable as well as gratifying, for a knowledge of what is most appreciated is an incentive not only to retain for such features the prominence they already receive, but to improve upon them further. To collect such a useful symposium of views is the unique privilege of those connected with the production of a journal as old as ours. Several readers have commented upon the legibility of the type we use, as well as the general clarity of presentation of text and illustrations, and emphasise the contribution so made to enjoyment of our articles. Sir Ralph Wedgwood has described these factors as of no less importance to the reader than are good light and a comfortable seat to the railway traveller. We value them as highly ourselves, and recognise them as an integral part in our policy of presenting the most complete survey possible of railway news to members of an industry for whom the supply of information from the widest sources is daily becoming a more pressing necessity.

Our Terminii

Recently, in opening an exhibition of work done by architects trained at the Architectural Association, the Parliamentary Secretary to the Ministry of Health, Mr. Geoffrey Shakespeare, said what a tragedy it was that in London there was not a railway terminus which could be called a work of architecture, and he suggested that some of the railway companies might celebrate this Jubilee year by employing a "first class architect to provide a railway terminus which should express the feelings of joy at return and sorrow at departure." Mr. Shakespeare's stricture is not without justification. The design of St. Pancras was based upon one intended for a Government building; Euston's tremendous entrance leads to unimposing platforms; Waterloo's solemn transformation is largely veiled from view; and Charing Cross is all cross and hotel. King's Cross disarms criticism by its utter unassertiveness, and, more than all the others, suggests its purpose. Perhaps the trouble is that hotel accommodation has been given street-front prominence, and it is not easy to make an hotel suggest a railway station; nor, indeed, would it be easy for even a "first class" architect to design a terminus expressing both joy and sorrow, but perhaps Mr. Shakespeare's happy term "first class" will tempt the companies to consider his suggestion.

* * * *

The Week's Traffics

Passenger traffics of the four group railways last week was stimulated by the heavy movement of passengers immediately preceding Jubilee Day. Generally speaking the receipts for the past week were encouraging, though more improvement in goods train earnings would have been welcome. For the year to date the L.M.S.R. has an increase in passenger train receipts of £200,000, and the corresponding increases on the three other railways are L.N.E.R. £139,000, Southern £129,000, and Great Western £33,000. The only aggregate increase in merchandise earnings is that of £9,000 on the Great Western.

	18th Week				Year to date.	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or dec.	%
L.M.S.R.	+ 66,000	- 7,000	+ 3,000	+ 62,000	+ 89,000	+ 0.45
L.N.E.R.	+ 25,000	- 10,000	-	+ 15,000	- 172,000	- 1.17
G.W.R.	+ 27,000	+ 3,000	+ 6,000	+ 36,000	- 28,000	- 0.34
S.R.	+ 35,000	- 500	- 2,500	+ 32,000	+ 6,000	+ 0.097

Mersey & Liverpool Overhead receipts for the week were better, and London Transport had a gain of £40,400.

* * * *

Transport in Northern Ireland

The Road and Railway Transport Bill recently introduced in the Parliament of Northern Ireland is summarised in our Railways and Road Transport Section this week. It follows in the main the recommendations made by Sir Felix Pole last July as the result of his inquiry undertaken at the request of that Government. These recommendations were set out on page 139 of THE RAILWAY GAZETTE of July 27, 1934, with a map of the railways and chief omnibus systems of Ulster. The Bill provides for the establishment of a Road Transport Board of 5 to 7 members, which will acquire every road motor undertaking operated for hire or reward in Northern Ireland, including the passenger and freight road transport undertakings of the railway companies (except the Londonderry & Lough Swilly), but not the tramway and omnibus undertaking of the Belfast Corporation, nor certain vehicles specially exempted, such as taxis, furniture removers' vehicles, and hotel buses. It will be the duty of the board to provide an efficient and properly co-ordinated service. Consideration for the transfer of

undertakings will be settled, in default of agreement, by an arbitration tribunal of three members. Clause 14 establishes a joint committee of six members which may submit pooling schemes with the railway companies for adoption by the board and ultimate confirmation by a Transport Appeal Tribunal of three members. This tribunal will also have certain jurisdiction as to revision of rates and fares and facilities, and will take over the present powers and duties of the Railway and Canal Commission and of the Motor Vehicles Tribunal established in 1929.

* * * *

Overseas Railway Traffics

Argentine railway traffics continue to improve both in currency and sterling except on the Buenos Ayres Western, and the Buenos Ayres Great Southern now has an increase in pesos for the 44 weeks of the current year of 6,686,000 or 6·55 per cent. The corresponding increase in currency on the Central Argentine is 6,469,250 pesos or 7·70 per cent. On the Buenos Ayres & Pacific the currency increase for the year to date is 3,246,000 pesos or 5·85 per cent. The Great Western of Brazil has an increase of 2,864 contos for the first 18 weeks of the year and a nominal increase of £5,300 in sterling. Within the past fortnight the Canadian Pacific has advanced over £100,000 in gross earnings, and has reduced its aggregate decrease to £64,400.

	No. of Weeks	Weekly Traffic	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
Buenos Ayres & Pacific	44th	94,796	+ 9,461	3,438,636	- 327,670
Buenos Ayres Great Southern	44th	131,047	+ 15,978	6,374,050	- 589,287
Buenos Ayres Western	44th	50,266	- 2,621	1,984,146	- 360,256
Central Argentine	44th	132,714	+ 20,329	5,291,211	- 485,667
Canadian Pacific	17th	619,400	+ 73,200	7,285,000	- 64,400
Bombay, Baroda & Central India	4th	242,625	+ 8,550	704,700	+ 2,625

* * * *

American Railway Pensions

A difficult situation has been created by the majority decision of the Supreme Court of the United States that the Railway Pensions Act signed by President Roosevelt last June, which was due to become operative on August 1, is unconstitutional. The Act, which provided for the retirement of all railway employees at 65 with pensions, was estimated to add \$60,000 a year to the scale of pensions at present in operation. Five judges, who gave the majority decision, held that the Act deprived the railways of property without due process of law and expressed the opinion that the social welfare provisions of the measure were outside the power of Congress. In the minority of four was the Chief Justice, who strongly dissented from this opinion. The decision has given rise to proposals in some quarters that legislation should be enacted to deprive the Court of its present power to review Federal legislation. Pending the reference to the Court the railways had taken no steps to put the Pensions Act into operation.

* * * *

The San Paulo Railway Outlook

At the meeting on Tuesday (see p. 947), Mr. Oliver H. Bury, M.Inst.C.E., Chairman of the San Paulo (Brazilian) Railway, was able to record satisfactory progress both in passenger and freight traffic. Services have been improved and intensified with the object of stimulating the movement of passengers and parcels, while on the goods side an increase of 76,000 tons in the amount of cotton transported has been the leading feature. To handle this growing business necessitated a net expenditure of £166,000 on renewals and replacements of locomotives and rolling stock, a diesel-electric train, and two hundred covered vans to meet a further expected improvement in the cotton trade. A revised scale of tariffs came into force at the beginning of this year, but the full benefit of these has still to be experienced, since the increases

accorded were principally in coffee, much of which has not yet been released from the control warehouses. Meanwhile further revisions are being sought to counteract the still falling exchange, and since the new constitution has shown itself progressive in other ways, there seems fair hope of the company being favourably heard, and also that such anomalies as Federal transport taxes and the compulsory purchase of unsuitable native coal may be rectified.

* * * *

Lord of the Underground

Liverpool is the nearest point at which the sentimental Londoner can recapture the pleasure he once felt in buying a ticket on the Underground. Time was when, however brief his sojourn in the infernal empire, he glowed to imagine that his mite had at least contributed something towards another inch of gold albert for the Senior Demon. Today he no longer knows if this is true, or, if it is, whether he is supposed to know it. Happy, then, the passenger by the Mersey Railway, who can still beguile himself with the idea of his coppers propitiating a personal demagogue, and one who displays an appropriate partiality to handbills of a fiery hue. He is, moreover, an understanding potentate, for we have seen season tickets advertised under the irresistible heading "Home for Lunch." It must be immensely heartening for office workers on Monday mornings to see that somebody else recognises their principal after-breakfast preoccupation. London Transport publicity rarely strikes so intimate a note, yet we must close our ears to those cynics who remark that this is not the only way in which the board reveals a low estimate of the amount of support required by the human frame.

* * * *

Electrification Speed-up on the Paris-Orléans

Considerable accelerations of service will follow the introduction by the Paris-Orléans-Midi Railways of electrical operation over the Central France main line from Vierzon to Brive-la-Gaillarde on May 14. From Paris (Quai d'Orsay) to Brive the trains will thus be worked continuously by electric power for 313 miles, as compared with 126½ miles only to Vierzon previously. This will be the longest continuous electric haulage in France. The most notable speed-up is that of the *rapide* leaving Paris at 9.10 p.m., which is to be detained until 10 p.m., in order to connect with the 2 p.m. service from London, but will reach Toulouse 60 min. earlier, at 8 a.m. (a gain of 1 hr. 50 min., which will bring this train nearly up to the speed of the Barcelona Express), and Port Bou at 1.49 p.m., the gain in the latter case being 2 hr. 12 min. A new express will leave Toulouse for Paris at 8.30 a.m., arriving at 7.10 p.m.; while the 10.30 a.m. from Toulouse is altered to 1.25 p.m. in its departure time, and reaches Paris at 11.35 p.m., giving another Toulouse-Paris service in just over 10 hr. The distance is 445 miles, but as is common knowledge, the gradients between Vierzon and Toulouse are extremely severe, and speed is severely limited over long distances by reason of curves. The Barcelona Express, with its loads often exceeding 600 tons, was already timed almost to the maximum speed possible over this difficult road, and the acceleration in this case is only 11 min.

* * * *

Liverpool Overhead Automatic Signals

The first colour-light signals in this country were installed on the Liverpool Overhead Railway and brought into use in July, 1921. They replaced another form of automatic signalling—the first installation in this country and the first on an electrically-operated railway in the

world. The earlier signals were brought into operation in 1893, at which period there was no track circuit to suit such conditions. The work done in 1921 included, therefore, track circuit throughout. It was carried out by the McKenzie, Holland & Westinghouse Power Signal Company. Speaking at the Manchester meeting of the Institution of Railway Signal Engineers on April 10, Mr. Box, the General Manager and Engineer of the L.O.R., gave testimony as to the remarkable way in which the 70 colour-light signals have performed their duty. During 1934 over 600,000 train-miles were run and there was not a single cancellation of a train during the year due to failure of power, equipment or signals, or to fog or breakdown. In 1933, 15 miles had to be cancelled, of which 13 were due to a burst water main off the railway's property. A high standard of maintenance, said Mr. Box, was necessary to obtain such records as these on so busy a line.

* * * *

Street Traffic Signals

Railwaymen are not professionally concerned with street traffic signals, but they may have an indirect interest in them as a development of the railway colour-light signal, and one often produced by railway signal manufacturing firms. The paper on the subject by Mr. F. Edwards, which was read and discussed at the Institution of Railway Signal Engineers on Wednesday, May 8, was, however, a contribution on a matter that, outside railway circles, is of very wide public interest, as little has been written on street traffic signals. The paper showed how ingeniously the many problems encountered in their design and installation have been met. Originally, they were operated on a time-controlled method, wherein a fixed period was given to each set of conflicting signals. This had the disadvantage that the signals were changed, after the time limit had expired, regardless of whether one stream of vehicles had passed or another was waiting. That objection was met by the vehicle-actuated apparatus, in which the green aspect for either road was retained only long enough to clear off the waiting vehicles. The system was accompanied by a limiting period, so as not to hold up unduly the traffic on the other approaches to the crossing. At the end of February last grants had been made from the Ministry of Transport for the erection of signals at 1,706 street crossings, and since the trial set of the vehicle-actuated method was installed in the City of London in March, 1932, and subsequently approved by the Ministry in the following September, no fewer than 854 street intersections have been equipped with that type or have been sanctioned.

* * * *

Non-Bogie Coaches

Now and again arguments arise as to the relative merits of bogie and non-bogie coaches. Practically all passenger carrying stock is now mounted upon two four-wheeled bogies, the vogue of the six-wheeled bogie having waned. Goods stock and a certain amount of stock for use in passenger trains, such as horse boxes, brake vans and parcel vans are still usually built as four-wheelers and give quite satisfactory service. Presumably the chief reason for adhering to the bogie principle for new passenger carrying stock is the steadier running obtained. There may, however, be particular circumstances in which non-bogie passenger carrying stock is preferable, and an example which comes to mind is the Edinburgh and Balerno branch of the L.M.S.R., where, owing to sharp curves, four-wheelers are still used and, in fact, new four-wheeled stock was placed in service on this line not long ago. Figures of

bogie and non-bogie stock cannot alone be taken as a criterion of up-to-date practice, and in this connection we regret that the L.N.E.R. and L.M.S.R. figures quoted in our editorial note on this subject last week were accidentally transposed. The number of non-bogie coaches at the end of 1928 and 1933 on these two lines should have read L.M.S.R. 202 and 759, and L.N.E.R. 436 and 2,834 respectively. The figures are published annually by the International Union of Railways.

* * * *

The Relation between High Speeds and Fatigue

Among the various causes of mechanical failure, breakages due to fatigue have always been fairly prominent, and unless more care than ever is taken in the design of parts subjected to repetitive and alternating stresses these failures are likely to become embarrassingly frequent with the advent of higher running speeds. Not only are the parts operating at these higher speeds subjected to bigger forces, but the limiting number of repetitions or alternations which an overstressed part can stand without rupture is more quickly reached. Up to the present quicker running has shown itself to be quite compatible with safety, but to make assurance doubly sure, this question of the fatigue limit of various parts should again receive the closest consideration. The time for investigations of this kind is before any accident has occurred and not afterwards. Fortunately for the investigator a notable contribution to the knowledge of this important subject has been published recently in the form of a paper entitled "The Relation of Fatigue to Modern Engine Design," which was read last January by R. A. MacGregor, W. S. Burn, M.Sc., and Professor F. Bacon, M.A., before the North-East Coast Institution of Engineers and Shipbuilders. The authors had in mind the marine oil engine of several thousand horsepower, but their opinions are well worth the notice of locomotive engineers, and the paper with its 220 bibliographical references at the end should be invaluable in design and drawing offices.

* * * *

Dynamometer Car Tests in India

A dynamometer car report recently issued by the Railway Board of India contains a mass of statistical data arising from tests carried out between Kalyan and Thana on the Bombay division of the Great Indian Peninsula Railway, with passenger and freight trains to which the G.I.P. dynamometer car was attached. The section of the railway referred to is electrified, and electric locomotives were used throughout the tests. The chief advantage gained by the use of electric locomotives, apart from economy of power, is stated to be that the desired speed could be obtained quickly and very constant speeds maintained over the test sections. A normal speed restriction of 65 m.p.h. is imposed on the section, but permission was granted for the tests to be conducted to include speeds of 70 m.p.h. The distance between the two points named is 10 $\frac{1}{2}$ miles. In an attempt to determine the head-on or frontal resistance encountered by a locomotive or the leading coach of an electric suburban train, the excess of resistance due to frontal pressure was ascertained by pushing the dynamometer car ahead of the locomotive. Speeds up to 57 m.p.h. were obtained during the trials, and the frontal pressure for broad gauge coaching stock worked out to be 0.1133 V² lb. in still air on the open line sections. The frontal resistance in Parsik tunnel was found to rise to 0.1485 V² lb. The report produces a very interesting study of various factors investigated by means of the dynamometer car.

Research

PEOPLE who are busy from morning till night running a house, hotel, fleet of omnibuses, or a railway, have little or no time to consider the equipment at their disposal or their particular way of handling it, and so it is only very rarely that they make any innovations. Change is generally the outcome of suggestions made in the first instance by leisured onlookers, and the services rendered by such persons are now gradually obtaining the recognition they deserve. Today the directors of most big undertakings realise that the onlooker is worth a wage and that paying him to stay and study the working of their organisations is one of the surest ways of fostering progress. Where he is thus given a definite status with apparatus and grants of money for the performance of experiments, the onlooker is dignified by the title of research worker. As might be imagined, the research worker has lost much of the freedom of the unpaid onlooker, in that the onlooking is now done to order in certain directions, and with the idea of solving specific problems. This was inevitable. Anyone taking a wage from a railway company would naturally expect to find himself confined to a study of railway matters. Again, his qualifications would set a limit to the operations he could watch with profit. It would, for example, serve no useful purpose if a leather technician or a bacteriologist wandered round locomotive running sheds or electricity generating stations all day. Where so much is hidden from the eye the onlooker needs to have had past experience besides having present leisure. All restraint is irksome, but in the modern research department the student of other people's affairs is certain to gain far more than he loses. There are usually generous facilities for experiment, and workshops to make what he requires for laboratory tests. Again, there is sure to be an office attached to the department through which he can be put into touch with the work of outside investigators. Here there will be files of press cuttings, the proceedings of the learned bodies, and many other well indexed sources of valuable information.

Some idea of the limitations imposed on the research worker and of the facilities he is nowadays given can be gleaned from a paper entitled "The Function of a Research Department" delivered recently by Mr. T. M. Herbert, of the L.M.S. Railway Research Department, before the Institute of Fuel. In this paper it is made apparent that the organisation of research work, like factory organisation, has now become a study in itself, and that departments responsible for investigation work will in future be conducted, as factories already are, on broadly similar lines irrespective of the nature of the work to be done. In common with other organisations the L.M.S.R. is putting its research workers under the direction of a board consisting of the principal technical officers working in collaboration with distinguished outside scientists, and very wisely there is a linking up with other research organisations, resulting in a certain measure of collaboration where an investigation is likely to benefit a number of undertakings. Such collaboration may eventually lead to greater things than are now anticipated. Working independently of one another, research departments have studied only to advance their parent undertakings as quickly as possible and often at each other's expense. Attracting the business of rivals, and taking the bread out of workers' mouths by labour saving devices have in the past been their chief aims, and, while these may be short cuts to a temporary prosperity for an individual concern, a few years of collaboration will teach research workers that they must study to further the general good if pros-

perity, and particularly the prosperity of the railways, is to be a lasting and a growing thing.

Predatory methods ought in this enlightened age to give way to the scarcely slower and certainly surer method of creating enough goods and services to satisfy everybody. This could be done quickly enough if some means were devised for distributing the plenty now available, and the various research departments should get together to see why swift production has constantly to wait on tardy distribution. Mr. Herbert said "The ultimate object of a research department is to assist in increasing the net revenue of the company in relation to its capital outlay. In the case of a railway company it may achieve this result either directly by pointing the way to savings in operating and maintenance costs or indirectly by assisting in the development of better services to the public." It only remains now for the public to provide themselves with incomes sufficient to purchase and enjoy the better services.

* * * *

The Newcastle & Carlisle Railway

IN the House of Commons as recently as November 22 last Dr. Leech, one of the Tyneside Members, made a strong plea in favour of a canal from the Tyne to the Solway, which he considered would be not only a great and useful project but also would alleviate unemployment. The building of such a canal was a live subject most than a century ago, but the scheme was then shelved in favour of the railway which this week completed 100 years of continuous and useful service. A company was formed in 1825 to promote this railway, but the Act (10 Geo. IV, cap. 72) was not obtained until May 22, 1829, when construction was authorised of a line from Newcastle to Carlisle with branches to Alston and Swarkestone (a total mileage of 78½), which were to be worked by horse power. It became evident during the construction that horse power would be inadequate on this, the longest railway up to that time projected in Great Britain. Accordingly, a Bill was introduced into Parliament to cover the substitution of steam locomotives, but on March 9, 1835, before the Bill was passed, the first section of the line was opened between Blydon and Hexham, 16½ miles, and steam traction used without Parliamentary power. Actually, a certain amount of horse drawn mineral traffic had been conveyed from November 26, 1834. The introduction of locomotives—with a formal opening ceremony which caused considerable local excitement—was speedily followed by action on the part of a local landowner who obtained an injunction which closed the line temporarily.

It was not until May 9, 1835, that the Newcastle & Carlisle Railway was opened for regular traffic, and therefore yesterday (Thursday) marked its centenary of continuous operation. The original Act provided for the raising of capital of £300,000 in £100 shares, and an additional £100,000 by loan as soon as the share capital was paid up. Further Acts over the next 30 years brought the issued capital up to £1½ million. The various sections of line were opened on the undermentioned dates: Blydon to Hexham, 16½ miles, May 9, 1835; Blydon to Derwenthaugh, 1½ miles, June 11, 1836; Hexham to Haydon Bridge, 7½ miles, June 28, 1836; Carlisle to Greenhead (Blenkinsopp Colliery), 20 miles, July 9, 1836; Derwenthaugh to Redheugh, 2½ miles, March 1, 1837; Carlisle Canal branch, 1½ miles, March 9, 1837; Greenhead to Haydon Bridge, 11 miles, June 18, 1838; Blydon to Newcastle (Forth), 3½ miles, May 21, 1839. The completion of the Greenhead-Haydon Bridge section gave the first through railway communication between the East and West coast of England. The 13-mile branch from

Haltwhistle to Alston was not opened until 1857, and the Newcastle terminus was located on the site of the present Forth goods yard until the Central station was opened in 1850. The line from Derwenthaugh to Redheugh was built by the Blaydon, Gateshead and Hebburn Railway, a company formed to lay a line from Blaydon to Hebburn with a view to carrying the Newcastle and Carlisle traffic further down the river to a convenient port of shipment. This 1½ miles was the only portion constructed; it was taken over by the N. & C. in 1836 and opened in 1837. The Blaydon, Gateshead and Hebburn Company ceased to exist in 1839.

Until its incorporation in the North Eastern Railway in 1862, the Newcastle & Carlisle Railway never failed to pay a dividend of 4 to 6 per cent. In 1848 a Bill was presented before Parliament to authorise the operation of the line by the York, Newcastle and Berwick Railway, but due to the fall of George Hudson this was never sanctioned. Just prior to this, negotiations were on foot for the absorption of the Maryport and Carlisle Railway, but terms satisfactory to both parties could not be arranged. The reason for the projection of the Newcastle & Carlisle was the traffic in hematite ore from the Whitehaven district to Cleveland, and the revenue from this source reached its peak about 1856. With the rapid development of Middlesbrough, a new line was built in 1861 between Tebay and Darlington, and this giving a shorter haul, business on the more northerly route fell off. During the 28 years of its separate existence the Newcastle & Carlisle owned 49 locomotives. Most were built by the firms of Robert Stephenson & Co. and R. & W. Hawthorn, but a few were built by the long-defunct Gateshead firm of Hawks & Thompson. First and second class passengers only were carried at the beginning, but it was not long before open thirds were provided. These open "carriages" were used for what was one of the earliest of excursion trains, namely, a trip from Carlisle to Newcastle in 1840, which was organised by a Mechanics Institute at Carlisle at a return fare of ten shillings.

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The Cost of Railway Signalling

IN the opening sentences of his paper on "Economic Aspects of Railway Signalling," read to the Institution of Railway Signal Engineers in Manchester on April 10, the author expressed the hope that his work might at least prove to be of interest, and possibly of value. That hope was more than realised and, by reproducing on page 923 a somewhat lengthy summary of the paper, we trust to gain for it the attention it deserves from a wider field than that of the Institution. Operating men, for instance, are deeply concerned in the subject, as out of the roughly £8 millions estimated by the author as being spent yearly on the operation and maintenance of signalling, £5,600,000, or practically two-thirds, are expended on the manning of signal-boxes. Moreover, the author would add a further £2½ millions for interest, or £10½ millions in all. The matter further affects the operating department in that signalling controls the movements of trains, provides their protection when running and when standing, is one of the essential features in shunting, and determines the carrying capacity of the line. When, moreover, we read that 16s. 5d. of every 20s. paid by the public is spent on the working expenditure of the railways, and that 1s. 1d. of the former sum is for the maintenance and use of signalling, the interest in this question, we submit, widens. The comparative size of this £8 millions may be appreciated when we remark that the maintenance and renewal of the permanent way, covering both

wages and material but exclusive of superintendence, cost just over £9 millions in 1933. Whilst this may be giving undue prominence to the actual responsibilities of the signal engineer, in that he may say that his duty ends at the provision and upkeep of the signal-boxes and that he has no responsibility for their manning, it is, after all, the number of signal-boxes that the signal engineer finds necessary to provide that is the main aspect in the question.

Both view points are so intertwined that, as Mr. Pearson has done, they must be considered as one whole. If, then, it be recognised that the upkeep of signalling is 6½ per cent. of the whole cost—£123 millions—of running a railway system, it must be appreciated that signalling plays a far more important part in railway affairs than is generally thought. Such was by no means the case until recently; just as the platelayer, who is ranked amongst the lowest grades of the line, is the man most often called in to help in an emergency, so signalling was regarded as a minor matter until circumstances gave a forcible demonstration of its importance. That, however, is changed, and Mr. Pearson used a happy phrase when, in the discussion on his paper, he said that signalling had now attained Cabinet rank. In concluding these remarks on the general question of signalling costs, we would revert to the interest therein of the operating department, in order to make an acknowledgment due thereto. The author observed that "generally speaking, the cost of maintenance has not fallen so acutely as the expenditure involved in paying the wages of signalmen and crossing-keepers." That will be seen from the following table, which represents the figures in the Railway Returns for all the British railways.

Year	1930	1931	1932	1933
Percentage drop below 1929:—				
Gross receipts ..	5·53	13·33	20·50	20·50
Wages of signalmen, &c. ..	0·59	7·30	11·84	13·78
Maintenance of signals ..	5·82	0·92	1·40	10·23

Unlike Mr. Pearson, we have based our figures on those for 1929, because that, as Sir Josiah Stamp said at the last L.M.S. annual meeting, is regarded by all the companies as the nearest normal year.

It seems to us, then, that whilst the figures given by Mr. Pearson are most valuable, they appear, obviously without any such intention, to present a challenge to the signal engineer, in that his maintenance figures have not marched in step with the fall in receipts. We would suggest various explanations for the conditions thus arising. In this we are going to ignore the figures for the maintenance of telegraphs and telephones. It is well known that the number of telephones has greatly increased, and advances in the expenditure thereon were to be expected. Let us, then, first express our regret that the author did not submit his figures in combined totals for the four main line companies, instead of presenting each company's results separately. The latter course at once provokes undesirable and, often, unwarranted comparisons. For instance, according to the total engine mileage, divided by the total mileage of running line reduced to single track, as given in the Railway Returns for 1933, the ratio of train mileage per mile of track was as 18 for the Southern to 13 for the L.N.E.R. The Southern again began its extensive resignalling in 1926, extending over a period of more than six years. A very large amount of new material was then installed in the London area and on the line to Brighton which would obviously need much less maintenance during the period in question. Probably the main factor why, "despite the economy campaigns in the trade depression period," there has been a tendency for a larger percentage to be expended on signalling maintenance is that practically all these economy

campaigns have called for the replacement of existing equipment, which is consequently a revenue charge. At London Bridge, for instance, two boxes, with a total of 346 levers, replaced ten boxes with 748 levers; at Brighton one box with 225 levers took the place of six boxes and 582 levers, whilst that at St. Enoch, with its 203 levers, displaced five boxes. We quote the above because they are examples of which we have published the details, but there are hundreds of less spectacular concentrations of working where corresponding economies have been effected that, of necessity, have led to abnormal revenue charges. As both the L.M.S.R. and L.N.E.R. have been particularly active of late in this direction, we think that therein is to be found the explanation for the former company's figures for 1932 and 1933 being higher than those for 1928, 1930, and 1931. The much higher figure for 1929 reminds us that Victoria-Exchange, Manchester, was opened in that year, when four boxes and 216 levers were saved. Yet another difficulty in the way of reducing signal maintenance to correspond with the fall in receipts is that it is natural in the first place to take advantage of the reduced traffic to carry out work with less inconvenience to the operating department and, secondly, to find occupation for men whom it is not advisable to dispense with. This may sound a feeble excuse, but the signal engineer knows from practical and, often, painful experience the wisdom of keeping hold of good men. We need not, we feel sure, pursue this second phase in Mr. Pearson's paper.

It is, finally, as the author says in his conclusion, not

possible to put a value on the increased line capacity that signalling has furnished. He also makes the same remark as to the increased safety. On the latter point we can throw some light. The Hawes Junction collision of December 24, 1910, led to the almost general adoption of track circuit and the consequent greater protection of trains standing in stations and at signals. During the five years prior to that date there were 233 collisions between passenger trains; for 1929-1933 the corresponding number was 104. There were 122 accidents of all kinds—derailments as well as collisions—inquired into between 1906 and 1910 inclusive, but only 49 for 1929-1933. Moreover—and this will help in placing a value on the increased safety—in the former period the companies were paying out an average of £150,000 a year as compensation for personal injuries to passengers; for the later five-year period the average was £40,000; actually in 1932 the amount was only £19,000. We would here fitly close with a homely incident related, in the discussion on Mr. Pearson's paper, by Mr. W. R. Jones, the Divisional Signal and Telegraph Engineer, Manchester, L.M.S.R. It was of a passenger who told Mr. Jones that for eighteen years he had been travelling daily first class from Birkdale to Manchester and back. He had done so in comfort, safety, and with that remarkable punctuality which appeals to the Manchester business man, and all for 1s. 8d. a trip or one halfpenny a mile. As Mr. Jones remarked, the railways are, in this respect, public trustees, and they have reason to be proud of the confidence placed in them.

LETTERS TO THE EDITOR

(*The Editor is not responsible for the opinions of correspondents*)

Rail and Steamer Competition in China

Kowloon-Canton Railway,
British Section,
Hong Kong, March 29

TO THE EDITOR OF THE RAILWAY GAZETTE
SIR.—I would like to comment on the overseas paragraph relating to rail and steamer competition with the Kowloon-Canton Railway, which appeared on page 327 of THE RAILWAY GAZETTE of February 22. This paragraph conveys an entirely erroneous impression of the situation, the facts of which are as follow:—

A diesel-engined boat, the *Lee Hang*, was placed on the Hong Kong-Canton river service on December 20, 1934. All ten boats on this run immediately became involved in a price-cutting war, the object of which was to force the *Lee Hang* off the run. This cut-throat competition was not directed against the railway and it culminated in February in fares for second class and deck passengers being reduced by about 70 per cent. It is possible at present to obtain a lower deck passage from Hong Kong to Canton for 10 cents by the smaller, and 30 cents by the larger steamers instead of 40 cents and \$1.00 as have previously obtained.

This uneconomic competition has involved the steamers in serious losses, as they are unable to cover operating expenses. First class fares by the larger steamers have not been changed, and it is thought that your correspondent has stressed unduly a minor aspect of the situation by the hypothetical comparison of first class boat travel at night and first class rail travel by day.

The railway caters for the growing numbers of the public who prefer speed and reliability at a reasonable price, and the fact that the journey by rail is accomplished in 2 hr. 57 min. as against 7 to 8 hr. by water shows why the present inter-boat competition is not regarded in too serious a light by the railway. During the year 1934 the railway

traffic between the two terminals exceeded the million passengers mark for the first time since the opening of the line.

Yours very truly,
R. D. WALKER
Manager and Chief Engineer

Railway Rhythm

37, St. John's Wood Park,
Hampstead, N.W. 8, May 2.

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I listened in to the item "Railway Rhythm" in the B.B.C. programme, and cannot help wondering whether other listeners were as utterly disappointed by it as I was myself. The subjects included (the interior of a signal-cabin at Clapham Junction, organisation at March sorting yard, etc.) could all have been made of real interest not merely to the "railwayist" but to the ordinary layman, who knows little about these things. A short account from each of the railwaymen who broadcast, in simple language and with the necessary terms explained, would have been something unusual and highly instructive, and would have left listeners with some lasting interest in railway phenomena, but to my mind the perpetual would-be humour of the B.B.C. artists spoiled any such effect and ruined the programme.

I am all for humour and cannot imagine life without it, but the stuff we were given was (a) humour at a very, very low ebb, if at all, (b) no compliment to the railwaymen or railways themselves, as implying that they and their subjects were "too dull" just to be taken on their merits and needed lavishly eking out with "humour" to make them go down with the public, who, it seems, are not considered capable of taking an intelligent interest and must therefore be patronised.

The drivers of the four "crack" expresses were good fun, and it would have been nice to have heard more from them. They, at least, afforded a welcome conclusion to the programme.

Yours faithfully,
G. H. MARILLIER

PUBLICATIONS RECEIVED

Manual of Argentine Railways for 1935. By Sir Stephen Killik. London : Sir Isaac Pitman & Sons Ltd., Parker Street, W.C.2. 7 in. x 4½ in. 75 pp. Folding map. Stiff boards. Price 2s. 6d. net.—This is the 30th annual issue of an authoritative work with which all investors and others interested in Argentine railways should provide themselves. The opening chapter on the Argentine railway year, which is always a valuable feature of the work, records that the internal and external loan conversions have materially helped Argentina's budget, and that internal business generally is showing a marked improvement.

Sir Stephen Killik explains to the perplexed investor the reasons which, in spite of renewed prosperity in Argentina itself, have so far prevented all but the best secured of the prior charge stocks of the Argentine railways from receiving their proper remuneration. The present edition contains up-to-date and detailed information concerning the affairs of fifteen groups of railways, together with full financial statistics and other essential features up to June, 1934. The different systems are again clearly indicated on the folding map, which includes useful insets of railways in and around the cities of Buenos Aires, Bahia Blanca, and Mendoza.

Hutchinson's A to Z Time-Tables—London to All Britain and Abroad by Train, Coach, Air and Sea (incorporating the Red Rail Guide). 1,087 pp. 7½ in. x 4½ in. x 1½ in. London : Hutchinson & Co. Ltd. 1s. 6d. monthly.—The publishers are to be congratulated on this enterprising venture. Using Gill Sans type throughout and an excellent quality of paper, they have produced an alphabetical guide which is a model of clarity, and the incorporation in the case of all the larger centres of population of the services to and from London by coach and by air, as well as those by train, makes this the most comprehensive compilation of its kind yet attempted. At the end is given a summary of the services between London and 200 of the principal cities abroad, followed by a brief section setting out the chief shipping services, and the dates and ports of all the sailings of ships from Great Britain during the month of issue. As regards Great Britain, over 6,000 places figure in the A. B. C. section. The minor stations, however, still preserve the somewhat vague intimation that the passenger should travel "from King's Cross to Guestwick. Three trains daily," to take one example. We trust that the day may come when the compilers will find it possible at least to name the three services giving these three connections, as the simple intimation that the branch station has three trains a day, or however many it may be, is of little or no

value. However, this new guide (apart from its cover, which is hardly an advertisement for the neatness of its contents) certainly represents a notable advance in compilations of its kind, and we must not expect too much, perhaps, in a guide of such generous compass priced at no more than eighteenpence.

South American Handbook, 1935. London : Trade & Travel Publication Limited, 14, Leadenhall Street, E.C.3. 7 in. x 4½ in. x 1 in. 628 pp. Illustrated. Price 2s. 6d. net, 3s. post free.—Latin-American conditions change rapidly from year to year and the South American Handbook, of which the twelfth annual edition is now before us, meets all reasonable requirements in providing the most up-to-date information on all the countries southward from Mexico to Tierra del Fuego. Indeed, there is no other annual handbook to South America printed in any language.

Last year the volume was increased to the extent of thirty-two pages, and this year there has been a further increase of sixteen pages. The present edition has been so thoroughly revised and brought up to date that barely a page remains untouched from the previous edition. Details of railways and of all other means of transport are lavishly provided, and there are maps of many of the principal railway systems which we particularly welcome, besides a clear map of all the countries described. As an instance of the accuracy displayed, the general map shows in white the area in dispute between Bolivia and Paraguay. Travellers for pleasure or business will find wise guidance as to hotels, tipping, diet, and clothing suitable for varying temperatures, &c., and a wealth of information on places worth visiting, besides ample statistical and trade information.

Practical Solution of Torsional Vibration Problems. By W. Ker Wilson. London : Chapman & Hall, 11, Henrietta Street, Covent Garden, W.C.2. 8½ in. x 5½ in. 438 pp. Price 25s. net.—Chapman & Hall have already published one able and practical treatise on torsional vibrations, and it was reviewed in these columns quite recently. The new book covers the same ground to a large extent, and is roughly the same size, but the inclusion of descriptive matter on vibration dampers and vibration recorders has necessitated the relegation of harmonic analysis to a brief appendix and also some compression of the treatment of branched systems.

The worked examples are from marine, electrical, and automobile engineering practice, and where approximations are made in the calculations they have the sanction of practical experience, the author having spent

several years in carrying out torsional vibration investigations on many different types of installation. The designer and the student of mechanical breakdown could hardly fail to learn much from the new book, which they will read from cover to cover without encountering anything more difficult in mathematics than the integration of a power of x and the Fourier series. Torsional vibration does not lend itself to really easy or popular treatment, however, and the present volume, while very readable to those under the urge of practical necessity, could not be expected to have a wide appeal. It is essentially a book for the specialist whose working time is largely devoted to the study of vibration problems, but in this rôle it should quickly find a secure place among the standard engineering treatises of the day.

Calendrier Touristique, 1935.—The principal public events in France for the current year are listed in this pocket booklet, published by the French railways. They include sporting fixtures, exhibitions and the numerous traditional functions and ceremonies which are so picturesque a feature of French provincial life. Brief descriptions are included in some cases, and where access is otherwise than by rail throughout, the nearest station or the transport service effecting the connection with the railway is indicated. The calendar is neatly bound in a dark blue cover, to which a map design adds an attractive note.

Twist Drills.—A new and strikingly designed folder from Edgar Allen & Co. Ltd., Sheffield, draws attention to the merits of Stag brand twist drills for special work in hard and difficult materials. These tools are manufactured from a super high speed steel which makes the drilling of manganese steel a commercial proposition. A performance of 106 holes, 1½ in. diameter, drilled without a grind in rolled and quenched manganese steel rails, at a feed of 120 cuts per in., is quoted as typical. Barnes floating straight shank twist drills are another pattern which minimise breakages and allow a greater number of holes being drilled to a grind.

Compressors, Vacuum Pumps, and Blowers.—An illustrated folder summarising the advantages of rotary compressors and vacuum pumps has been published by the B. A. Holland Engineering Co. Ltd., 18, Victoria Street, S.W.1. Absence of vibration and a continuous delivery are valuable features of this type of plant, which is also remarkably compact and light. The rotary compressors give from 10 lb. per sq. in. in an air-cooled type to 250 lb. per sq. in. in a two-stage water-cooled machine. Vacuums of over 99 per cent. are secured by the largest pattern of rotary pumps. The folder also lists a range of low-pressure blowers capable of giving up to 5,000 cub. ft. per min. at 160-in. pressure (water gauge).

May 10, 1935

THE SCRAP HEAP

Twenty-five Years After

On subsequent pages we publish a selection of the many appreciative tributes which we have received on the occasion of our centenary. Three-quarters of a century ago, when *Herapath's Railway Journal* had been established just 25 years, three of the papers now incorporated in THE RAILWAY GAZETTE were the subjects of the following remarks in "Lever's Illustrated Year-Book," 1861:—

"The Railway Times was established in the year 1837; shortly after the introduction of railways. This valuable paper has continued the same throughout all the changes which have affected the railway world, and has never swerved from its independence, or attached itself to any party interest. *The Railway Journal*, better known as *Herapath's*

Journal, from the name of its publisher, was established first as *The Railway Magazine*, in the year 1835. This paper exhibits first-rate engineering and mechanical knowledge, and also treats very largely and with great accuracy upon the progress of railways, their financial affairs, &c., as well as upon improvements in machinery, and manufacturing processes. Its investigations are also extended with similar care and scientific penetration to the Colonial and Foreign railway undertakings . . . *The Railway Record*, established in 1844, is distinguished by its correct and ample details of all that regards both foreign and English Railways. The information published in its columns respecting different statistics, and the intricacies of railway

law on the continent, have obtained for it a well-earned reputation, which it continues to maintain."

* * *

AT A RAILWAY MEETING

REPORTER (to confrère).—"I can't hear half he says; was it, 'Our decayed railways are groping . . . ?'"

CONFRÈRE.—"No; 'a decade of railway grouping.'"

* * *

The Unterwasser-Iltios funicular in Switzerland has carried 75,000 return passengers since it was opened for traffic at the end of July, 1934. On several Sundays more than 2,900 passengers were booked.

* * *

While clearing out a creek under a railway bridge on his land, a Texas farmer recently uncovered an old Texas & Pacific Railroad engine which had been buried for nearly 60 years. In 1876 a cloudburst washed away the bridge and the engine plunged into the river, where it had lain forgotten.

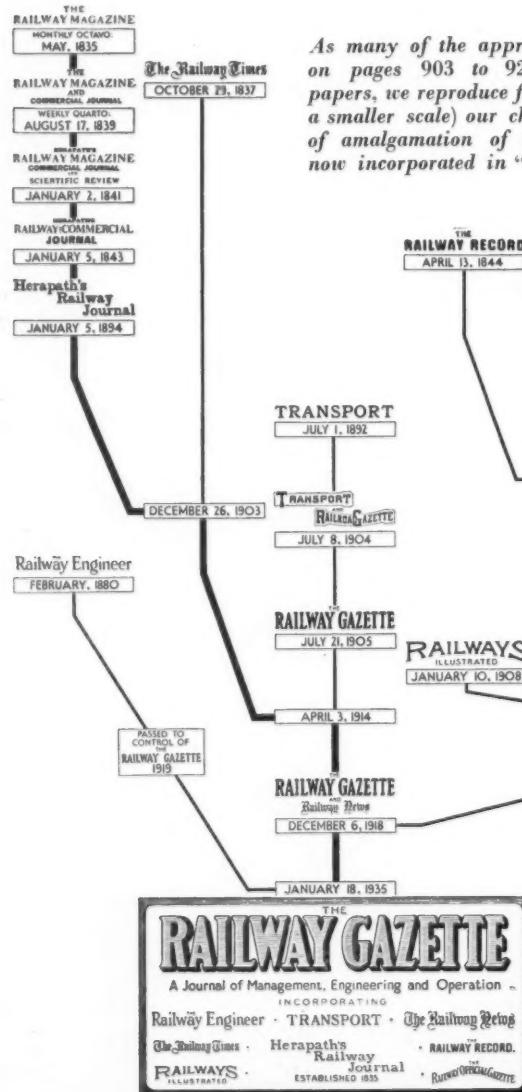
* * *

Canadian railway police have many unusual and often dangerous tasks. Recently, a report made by a Canadian National Railways constable at North Bay, Ontario, stated that an unknown man had been chopping down snow plough signs in a remote part of the North Country. These signs, in the form of a cross, are placed at level crossings to warn the crew of the plough to raise the flange to avoid the track protections. The constable found that the damage was caused by a maniac whose mania took the form of destroying all cross-shaped signs, and who also stated that the trains had no right to operate beside his property and disturb him. After being threatened with an axe, the constable pacified the man and, enlisting the aid of a provincial police officer, got the madman placed safely in custody after a struggle.

* * *

TWO JUBILEES AND A HOSPITAL

Passengers using Hadley Wood station, L.N.E.R., last week were able to make a contribution to the Victoria Cottage Hospital, Barnet, in circumstances of great interest. Their money was collected by Mr. Edward Hootton, who was a member of the station staff when it was opened for traffic on May 1, 1885, fifty years ago. Mr. Hootton visits Hadley Wood every May Day, and since his whole railway career was in the Barnet district, and he has at some time been a patient of the Victoria Cottage Hospital, it was arranged for him to have a collecting box at the station on the occasion of its jubilee. The fact was announced in a large hand-lettered poster which the hospital arranged to have made for him. The text, of course, linked up the event with the Silver Jubilee of May 6, by means of a bold inscription in blue, black, and red on a white ground, and a red, white, and blue border. A temporary notice was also exhibited by the station staff.



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OVERSEAS RAILWAY AFFAIRS

(From our Special correspondents)

IRELAND

Temporary Work for Strike Victims

Many men who lost their employment with the Great Southern Railways during the recent strike stand a good chance of obtaining temporary work in replacement of staff on holiday during the summer months. A number of men re-absorbed by the company during the strike had previously been similarly engaged on holiday relief work.

Suggestion to Convert Railway to Road

The Great Southern Railways administration is now considering a scheme submitted by Mr. Gibney, a Dublin architect, for the conversion of the Galway-Clifden Railway into a motor road. He points out that it is necessary only to remove the permanent way and to resurface the formation in order to secure an ideally graded and curved highway, 50 miles in length. The suggestion is that the stations should be converted into hostels and garages, and it is claimed that unemployment in the area would be temporarily reduced. The motive behind the plan is the attraction of tourists to this beautiful stretch of country in Connemara.

Cork and Muskerry Railway Liabilities

The Cork County Surveyor has suggested to his council that a deal should be concluded with the Cork & Muskerry Railway Company as follows:—The abandoned railway runs beside the road from Cork to Leemount and the company will have to spend £1,730 in removing the permanent way and restoring the ground to its original condition. But beyond Leemount a further nine miles of track are also on land adjoining roads, and the council needs this land—some 21 acres in extent—for road widening and improvement. The council is therefore asked to purchase this land for £105, or rather to accept a payment of £1,730 less £105, or £1,625 net, from the company in full discharge of its liabilities provided the land required is transferred to the council.

Northern Ireland Railway Grants

In introducing an estimate of £18,286, for various services, in the Northern Parliament, the Commerce Minister explained that the increase over the 1934-35 estimates was accounted for by proposed grants to the Londonderry & Lough Swilly and to the Sligo, Leitrim & Northern Counties Railways. Their losses in working were not the fault of companies, nor were they due to great road freight competition. Road passenger competition was acute and losses great, but the principal source

of deficit was the economic dispute between the Imperial Government and the Free State Government. Northern Ireland would deprecate the closing of these lines and so, after careful consideration, it had been decided to grant a sum of £2,500 per annum for three years to the companies as from January 1 last. If due advantage were taken of the recent Free State legislation to reorganise services and compulsorily acquire competing road services, the difficulties of the Lough Swilly Company might yet be overcome. But capital was necessary for this policy and was not available to the company. Government therefore proposed to grant £5,000 for this purpose in three yearly instalments.

ARGENTINA

Appointment of Special Government Commission

Following the publication of the report of the Argentine Government Railway Commission [a summary of which we published in an editorial note in our issue of April 26—Ed., R.G.] the Government has subsequently issued a decree appointing a special commission to draft the changes in the railway laws and regulations deemed advisable in view of the conclusions and recommendations contained in the report. The Commission consists of the Director-General of Railways (Engineer Manuel Garcia Torre) (Chairman); the Sub-Manager of the State Railways (Engineer Augusto Krause Karmin); the Secretary of the Advisory Board of Railway Lawyers (Dr. Jose Beltrame); and the Legal Adviser of the Director-General of Railways (Dr. Horacio L. Perrando). The Commission is authorised to appoint sub-committees to study and report on the technical and economic aspects of the question. The draft of the new laws and regulations is to be submitted to the Government through the Ministry of Public Works.

Harvest Estimates : Second Official Estimate

According to the revised estimates issued by the Ministry of Agriculture, the Argentine wheat crop for 1934-35 will be 374,000 tons lower than originally calculated. As compared with last year a reduction of 1,301,000 tons is indicated, although the crop will be slightly above the average for the last five years. The difference between the figures now issued and those of the first official estimate—published in THE RAILWAY GAZETTE of February 15—is attributed mainly to weather conditions. The figures for linseed are 128,000 tons higher than those given in the first estimate, while those for wheat, oats and barley are lower by

374,000 tons, 160,000 tons and 44,000 tons, respectively. The following table shows the revised estimates as compared with those of last year's production:—

	1934-35 (tons)	1933-34 (tons)
Wheat...	6,486,000	7,787,000
Linseed	1,958,000	1,590,000
Oats ...	970,000	833,000
Barley...	866,000	734,579

South American Branch of the Institution of Locomotive Engineers

By the courtesy of the management of the B.A. & Pacific Railway, the first meeting of the 1935 session of this branch was held at that company's locomotive works at Junin on March 29. In the unavoidable absence of the Chairman of the branch, Mr. Ormond Steven, the Vice-Chairman, Mr. E. J. Beckwith, presided over the gathering, which numbered some 100 members. Mr. R. E. Kimberley, Chief Mechanical Engineer, B.A. & P. R., welcomed the party on behalf of the General Manager. A paper entitled "Toolroom Practice on an Argentine Railway—Yesterday, Today and Tomorrow," was read by Mr. A. H. Black, and was followed by an interesting discussion, a luncheon, served in two dining cars, and tour of the workshops.

INDIA

East Indian Railway Works Programme for 1935-36

On the East Indian Railway, the allotment for the Capital and Depreciation Fund expenditure on the programme of improvements and developments during the year 1935-36 amounts to Rs. 304.30 lakhs, the whole of which sum will be spent on rolling stock and open line works. The expenditure budgeted for the rolling stock programme totals Rs. 116.33 lakhs (Capital Rs. 68.40 lakhs and Depreciation Fund Rs. 47.93 lakhs). 1,000 four-wheeled units of goods stock and 97 four-wheeled units of coaching stock are to be scrapped but not replaced. Provision is made for the addition of 1,500 broad gauge "O" type open wagons, 833 "CMR" type covered wagons, 25 oil tank wagons and 25 brake vans at a cost of Rs. 97.32 lakhs.

Provision for Engineering Works

A sum of Rs. 93.80 lakhs will be spent on track renewals and the total expenditure proposed for bridgework and other structural and engineering works amounts to Rs. 81.33 lakhs. Works in progress include the reconstruction of the Chandmari Road overbridge in Howrah, the reconditioning of viaducts between the Jumna Bridge and Allahabad, the reconstruction of the Adjai Bridge and the strengthening and rebuilding of smaller bridges. The most important of the new works to be started in 1935-36 is the regirdering of the Dufferin Bridge between Moghal Sarai and Benares, which is estimated to cost Rs. 84 lakhs.

May 10, 1935

The theoretical strength of the existing girders is only 60 per cent. of the main line standard, and there is a permanent speed restriction of 10 m.p.h. for all traffic over the bridge. Moreover, the existing bridge carries only a single track and forms a bottle-neck for traffic to the west of the United Provinces and the Punjab. The piers have been tested and found capable of withstanding the additional load of the new double-line spans, with which it is proposed to regirder the bridge: a start will be made during the current year for which Rs. 1.30 lakhs are provided. A provision of Rs. 8 lakhs is made to recondition bridges on the older sections of line, which are showing signs of weakness under the loads they are now required to carry, and Rs. 2½ lakhs are budgeted for new electricity supplies at Bhagalpur and Sahebgunge and certain stations in the Jheria coalfield area. The total net expenditure on open line works includes certain credit adjustments on stores and manufacturing suspense and emergency deductions from pay.

Eastern Bengal Railway Programme

A net provision of Rs. 160.71 lakhs (after adjustments) is made for expenditure on Capital account and from the Depreciation Fund on improvements and developments on the Eastern Bengal Railway during 1935-36. No new construction is to be undertaken. The rolling stock programme, involving an expenditure of Rs. 75.60 lakhs, is mostly one of betterment of the existing vehicles with a few additions to the carriage and wagon stock. In the works programme, track renewal forms the heaviest item of expenditure, amounting to Rs. 31.43 lakhs. Bridge-work and other structural and engineering works will absorb Rs. 24.59 lakhs. Out of the provision of Rs. 35 lakhs for expenditure on the Hardinge Bridge protection and training works, a sum of Rs. 15 lakhs represents revenue expenditure initially met from the Depreciation Fund. A sum of Rs. 50,000 will also be spent on the restoration of earthquake damages as revenue expenditure initially met from the Depreciation Fund. It has now been decided not to rebuild the Gorai Bridge, but only to regirder it. The change will save about Rs. 21 lakhs in the estimated cost of the work, and a sum of Rs. 9 lakhs is provided for the modified scheme in this year.

Current Year's Expenditure on the Bengal-Nagpur Railway

The allotment for the Capital and Depreciation Fund programme for 1935-36 on the Bengal-Nagpur Railway amounts to Rs. 159.98 lakhs after making sundry credit adjustments. The expenditure is to be wholly on open-line works. A provision of Rs. 39.70 lakhs is made for the rolling stock programme which is largely confined to the betterment of the existing stock. The works programme includes track renewal (Rs. 54.14 lakhs), bridge work (Rs. 57 lakhs), other struc-

tural and engineering works (Rs. 65.79 lakhs), collieries (Rs. 1.30 lakhs) and ferries (Rs. 1 lakh). In order to meet increased traffic and to enable the larger types of engines to be used, it is proposed to spend about Rs. 8½ lakhs for remodelling locomotive yards and sheds. Some Rs. 4½ lakhs are to be spent on new machinery to bring Kharagpur workshops up to date, where also the generating plant power house is to be modernised at an estimated cost of Rs. 10 lakhs. Provision is made for a shop for the heat treatment of steel and the internal transport scheme at the shops will be improved at a cost of Rs. 1.50 lakhs. The supply of electricity at Chakardharpur, Bhojudih and Bilaspur, is also being taken in hand, involving an expenditure of about Rs. 6 lakhs.

ESTONIA

New Oil-burning Locomotives

The State Railways rolling stock renewal programme for the next three years includes the replacement of ten locomotives. The 1935-36 Budget contains a provision of 100,000 crowns to enable a start to be made on these replacements; the average cost of each new locomotive is estimated to be 70,000 crowns. The ten engines will be built in Estonia and will be oil-fired.

FRENCH NORTH AFRICA

Financial Position in Morocco

Receipts of the Moroccan Railways (Chemins de Fer du Maroc) for the year 1934 amount to fr. 64,320,600, against fr. 65,176,400 in 1933. Receipts of the Tangier-Fez Railway (Chemin de Fer de Tanger à Fez) for 1934 total fr. 11,641,900, against fr. 15,205,800 in 1933.

Narrow Gauge Lines to be Closed

The Council of the Moroccan Railways has decided to close the remaining narrow-gauge 2-ft. (60-cm.) lines. The date fixed for the closing of the line from Guercif to Midelt is October 1, 1935. The line from Ain de Fali to Ouezzane will cease to operate about April 1, 1936, and the one from Mechra-bel-Ksiri to Ourtzag toward the end of 1936. Suppression of these lines depends upon the improvement of the existing highway tracks, as, apparently, the traffic will be transferred to road transport.

Among the public works recommended, in addition to the Sahara Railway, by the French Imperial Economic Conference, is the construction of a railway in Morocco to exploit the manganese deposits in the Atlas Mountains. The estimated cost is fr. 80,000,000 (about £1,000,000). The working of these deposits is considered a matter of national importance. Another proposal concerns the Algerian Railways and provides for an important improve-

ment between Oujda and Ghardiam in the great trans-North African line from Casablanca to Tunis.

DENMARK

New Station News Theatre at Copenhagen

In February there was opened in the Copenhagen Central station a cinema, which contains 300 seats, and is decorated with scenes from Denmark and abroad. The continuous performance includes news, nature films, &c., and has proved a great success.

Station Hotel in Copenhagen

An hotel, named the Astoria, has just been opened on a site adjacent to the Central station, which site, as mentioned in THE RAILWAY GAZETTE of May 25 last, belongs to the State Railways and has been let out on long leasehold. The hotel is thoroughly modern and should be very convenient for foreigners visiting the city, especially as the whole staff is able to talk both English and German. On the ground floor the State Railways have a well laid out travel bureau with access to the main street, and there are also some striking railway coloured light advertisements on the hotel. As a matter of fact, the State Railways, which formerly did not spend much in advertising, now have one of the finest advertising departments in the country, and are just as popular as they were unpopular five years ago.

The South Fünen Railways

The committee appointed by the Minister of Transport to investigate financial matters on the South Fünen Railways, the largest private railway system in Denmark, has now issued its report. According to this a financial reconstruction is unavoidable. The old shares held by the local towns and by the State, must be cancelled, and the loan capital cut down, the banks bearing the loss, and new capital for improvement and renewals of the track must be found. It is recommended that two of the five lines be closed in the course of the next few years, and the traffic carried by railway operated road services, as the railways hold licences for most of the buses in the area, and the granting of licences for railway lorries is also recommended. At present 85 per cent. of the train service is in the form of petrol and diesel railcars, the stock being five petrol and nine diesel-electric cars.

The report states that these cars are giving excellent service, each covering about 50,000-60,000 miles a year on local stopping services, and through their use important economies have been effected. A new system for the superannuation of the staff is recommended. It has not been found possible economically to run the company's buses charging the same fares as on the railway, and increased bus fares have therefore had to be introduced.

OUR CENTENARY—MESSAGES FROM READERS

As announced in our May 3 issue, "The Railway Gazette" and the journals incorporated with it have completed 100 years of continuous publication

ON this and the following 19 pages we publish a first instalment of the many messages we have received in connection with the centenary of THE RAILWAY GAZETTE and the various railway journals now incorporated with it, the earliest of which made its first appearance on May 1, 1835. In expressing our thanks to all who have written, may we say how greatly we value their appreciative and encouraging messages. We assure them that they will not make us conceited; in fact, already they have had an opposite effect, having aroused a certain sense of apprehension as to whether in the years which we hope are before us THE RAILWAY GAZETTE will continue to earn the regard of its readers to the same extent.

To decide in what order the "messages" should be published has been a matter of no little difficulty. We appreciate the last one published as much as the first. Except that, quite naturally, we have started with those from the Minister of Transport and from railway chairmen and railway general managers, we have not attempted to arrange the others on any basis of precedence. As far as possible, the method adopted has been to arrange them in groups—accountants, engineers, manufacturers, traffic officers, societies, and so forth; the sequence in which individual members of a group appear being mainly alphabetical. Even this has not been practicable in all cases as, owing to the varying length of the messages, we have avoided as far as possible starting a message at the bottom of a column which a strict adherence to alphabetical order would have entailed.

We would also point out that in publishing these messages we have this week added 20 pages to our normal number of text pages, and therefore have not deprived our readers of any of the paper's regular features or the usual number of articles in order to accommodate this first instalment of the many messages we have received in connection with our centenary.

Mr. L. Hore-Belisha, M.P., Minister of Transport.

May good fortune and a service of equal usefulness attend THE RAILWAY GAZETTE during its next 100 years of life!

Sir Cyril W. Hurcomb, K.B.E., C.B., Permanent Secretary, Ministry of Transport.

Since the early days of the Ministry of Transport, THE RAILWAY GAZETTE has been read each week by many of its senior and other officials who have always found much to interest them in its articles, and in its admirable illustrations, pictorial and diagrammatic. They look in the GAZETTE to see accurate and well-informed accounts of the happenings in the railway world, and wish the GAZETTE a second centenary of usefulness and prosperity.

The Rt. Hon. Lord Ashfield, P.C., Chairman, London Passenger Transport Board.

It gives me very real pleasure to send you my congratulations on the occasion of the completion of 100 years of continuous publication of THE RAILWAY GAZETTE and the journals incorporated in it.

To have served the railway industry faithfully and well throughout almost the whole of the time during which railways have been in existence is a notable achievement and will, I am sure, inspire those responsible for this publication to maintain and improve this high tradition for efficient and reliable service to the railway industry.

Mr. R. Holland-Martin, C.B., Chairman, Southern Railway Company.

I certainly wish to add my congratulations to the many which THE RAILWAY GAZETTE will receive on the centenary of its continuous publication. It is a great help to any industry to have a reliable, well-informed, and independent paper which covers the working of that industry in all parts

of the world. That the railway industry has in THE RAILWAY GAZETTE, and there is scarcely a week in which there is not some outlook or some illustration that gives one information which it would be difficult to find elsewhere. May THE RAILWAY GAZETTE long flourish and be the channel for such information for at least another hundred years.

Rt. Hon. Sir Robert Horne, G.B.E., K.C., M.P., Chairman, Great Western Railway Company.

Every reader of THE RAILWAY GAZETTE will be glad to congratulate this famous journal upon reaching the hundredth year of its existence. During this long period it has been a source of reliable information and illuminating exposition to a vast variety of people interested in the railways of our country. The service which it has rendered during that time is incalculable, and the gratitude of its many devotees will, I am sure, find continued expression in the regularity with which THE RAILWAY GAZETTE is read.

Although it is one hundred years old, it has all the spring of youth in its management and administration, and I am sure that its life will be long and that its readers will grow in number.

Sir Josiah Stamp, G.C.B., G.B.E., D.Sc., Chairman of the Company and President of the Executive, London Midland & Scottish Railway Company.

I understand that on May 3 THE RAILWAY GAZETTE and its incorporated journals will have completed a hundred years of continuous publication, and I am glad to avail myself of this opportunity of congratulating you on the successful accomplishment of a task which has been of great value in assisting railway progress. There is a saying that it takes a good deal of history to make a little literature, and while this is perhaps true of British railways, I am sure that the encyclopaedic records provided by your journal go far towards filling the gap. I wish you all success in the future.

Mr. William Whitelaw, Chairman, London & North Eastern Railway Company.

Please accept from me at the end of your first hundred years a warm acknowledgment of my indebtedness to THE RAILWAY GAZETTE, and formerly to *The Railway News*, for the invaluable information which I have received from them during my thirty-seven years of railway life. Not only am I indebted to your publications for knowledge of railway practice and development throughout the world, but I have again and again profited by your editorial comments and often frank, though kindly, criticism of Railway Administration.

You have always hit off that happy medium between welcome commendation and completely independent judgment which must always be the distinguishing mark of a really helpful technical press.

I congratulate the GAZETTE and all connected with it and wish you all a prosperous future.

The Rt. Hon. Lord Palmer, Deputy Chairman, Great Western Railway Company.

Ever since I became a Director of the Great Western Railway in 1898, and Joint Deputy Chairman with the late Mr. W. Robinson in 1906, and sole Deputy Chairman from 1910 to 1934, I have been a constant reader of your paper, and can therefore speak with knowledge of its value to those, who like myself, have unfailing interest in all matters concerning our railways, and I should not like such an occasion to pass without sending you these few lines of hearty congratulations, wishing continued prosperity to your undertaking, and in the hope you may long continue to chronicle, whether at home or abroad, all matters pertaining to the developments of the railways of the world.

May 10, 1935

**The Rt. Hon. Sir Eric Geddes, G.C.B., G.B.E., K.C.B.,
Chairman, Imperial Airways Limited.**

I have much pleasure in congratulating THE RAILWAY GAZETTE and the other journals incorporated with it on reaching their centenary.

To be able to claim that the first issue of these journals, which are so valuable to all those connected with and interested in railway development, appeared only a few years after the opening of the Stockton & Darlington Railway—the forerunner of the present railway system—and that they have been published continuously ever since, is indeed a wonderful record, and one to be proud of.

Mr. Frank Pick, Vice-Chairman, London Passenger Transport Board.

A hundred years of service represents a considerable achievement. At least four generations of railwaymen must have contributed to it and found in it help. This hundred years has beside been revolutionary in character. The contrast between the first and the last year must be stupendous, using this word in its literal significance. The record of THE RAILWAY GAZETTE, and its predecessors now happily incorporated within it, must on this account alone have great value. If, then, it is possible to look back with satisfaction over so long a stretch of time, it is surely equally possible to look forward with hope, not maybe, that the revolution will proceed at quite so great a rate, but certainly that THE RAILWAY GAZETTE will continue to record its course strengthened and enlarged for the task, for it is possible to see in the GAZETTE itself a parallel progress to that which has characterised the railways, the field within which it has especially laboured. On this account its centenary is a matter for congratulation and thanks.

Mr. A. W. Bolden, Chairman, Antofagasta (Chili) & Bolivia Railway Co. Ltd.

We are accustomed to long tradition in this country, but any newspaper's continuous publication for 100 years is a matter for real congratulation, which I offer to THE RAILWAY GAZETTE with my best wishes for its future. I emphasise the latter because, as a railwayman, I am hopeful for the continuance and improved position of railways, in which event THE RAILWAY GAZETTE is certain to continue to be read by a very wide circle of supporters who I feel sure, like myself, find in it interesting and valuable news, well up to date, of everything of any importance which appertains to a railway. I think the "Diesel" supplement is an excellent feature.

Sir Follett Holt, K.B.E., Chairman, Buenos Ayres Great Southern and Buenos Ayres Western Railway Companies, &c.

As a reader of THE RAILWAY GAZETTE I would like to add my congratulations to the many that you will receive on the completion of 100 years of service to railwaymen in all parts of the world. Railway operating is today a science, and from those responsible calls for a knowledge of all the inventions and improvements that are now accruing so rapidly, and it is THE RAILWAY GAZETTE that is of the greatest help in providing the expert information that is needed by the modern railwayman.

Mr. A. Muirhead, C.I.E., Chairman and Managing Director, South Indian Railway Co. Ltd.

I am very pleased to be afforded the opportunity of associating myself with the congratulations and expressions of good wishes extended to THE RAILWAY GAZETTE and the journals now incorporated with it, on completing 100 years of continued publication. Such an achievement is proof in itself of the value of THE RAILWAY GAZETTE and that it has moved with the times. May it continue to serve all interested in railways as helpfully in the future as it has in the past.

Mr. W. Howard-Williams, C.B.E., Chairman, Central Argentine Railway Limited.

I want to congratulate you upon the attainment of 100 years of publication of THE RAILWAY GAZETTE, and to tell you from personal experience abroad of the value placed

upon it by the officers of the various railways. It is not merely the means of keeping in touch with the progress which is constantly being made throughout the world in railway development, but the educational part of its news is so valuable to those who, thousands of miles away, are striving to keep the flag flying. May I also express the hope that the GAZETTE will continue to flourish and to maintain its high standard.

Sir James Milne, C.S.I., General Manager, Great Western Railway.

I should like to add my congratulations to the very large number which I am sure you will receive on the occasion of the centenary of THE RAILWAY GAZETTE and the journals incorporated with it. There are many railway officers in all parts of the world who look forward each week, as I do, to its publication, and to whom it is an invaluable medium for enlarging their knowledge of transport development and activity. I have been a reader of your paper for many years, and am impressed by the wide range of railway matters which you cover and the standard of excellence in production which you set. May you continue to perform this useful service for many years.

Sir Ralph L. Wedgwood, C.B., C.M.G., Chief General Manager, London & North Eastern Railway.

Please accept my warmest congratulations on the centenary of THE RAILWAY GAZETTE and its constituent journals. *Heraclitus' Journal* is "the Stockton & Darlington of Railway Journalism," and has as distinguished a record. My knowledge of THE RAILWAY GAZETTE goes back 40 years, and during all that time it has been remarkable for the intelligence and independence of its outlook; every railwayman turns to it for the best information on railway developments all over the world, for sympathetic criticism, and for thoughtful contributions towards the solution of railway problems. In all those respects the GAZETTE during the last 30 years has held a unique position.

I should like to add a special word of praise also for the clear print and admirable form in which the matter of the GAZETTE is presented to its readers—minor points, perhaps, compared to the substance of the articles, but no less important to the convenience of the reader, than good light and a comfortable seat to a railway passenger.

May the GAZETTE go on and prosper, and when its second centenary comes round may its name still be THE RAILWAY GAZETTE, and, despite competing attractions, may the railways still occupy the premier place in its pages.

Sir Harold Hartley, C.B.E., F.R.S., Vice-President (Works and Ancillary Undertakings and Director of Scientific Research), London Midland & Scottish Railway.

I am very interested to learn that THE RAILWAY GAZETTE and its incorporated journals will celebrate its centenary on May 3. During the last 100 years railways have done as much as any other agency to advance modern civilisation, and the great developments that have taken place in this method of transport have been kept before your readers in a manner enlightening and interesting both to technical and non-technical men. Just as the general public depends upon the general press for the dissemination of news, so does each particular industry depend upon its own technical press, and it is no exaggeration to say that THE RAILWAY GAZETTE has kept its readers fully apprised of the vast improvements that have been effected not only in Great Britain, but all over the world, in locomotives, carriages and rolling stock generally, and in all engineering branches. It is no simple task to present abstruse technical matters in a form capable of easy assimilation by the ordinary reader interested in railway affairs, and from my point of view it is in the regular accomplishment of this that the success of the journal has been most marked.

I offer you my congratulations on your achievement, and feel sure that your success in the future will be no less than in the past.

Sir Herbert Walker, K.C.B., General Manager, Southern Railway.

In sending my congratulations to THE RAILWAY GAZETTE and the Journals now incorporated with it upon having completed 100 years of continuous publication, I should like to express my appreciation of the very useful work which has been accomplished by that journal over such a long period.

The fact that THE RAILWAY GAZETTE has had such a long existence speaks well for the way in which it has been conducted, and the excellence of its news and reports, which are always up to date and of an extremely useful and interesting character. There is no doubt that THE RAILWAY GAZETTE plays an important part in the railway world in keeping everyone advised as to the many railway events and happenings and also the developments taking place all over the world.

I trust that THE RAILWAY GAZETTE may continue to flourish in the future as in the past, in order that it may continue to perform that useful task which it has so well and worthily undertaken for so many years.

Mr. W. V. Wood, Vice-President (Finance and Service Departments), London Midland & Scottish Railway.

I have heard with great interest that THE RAILWAY GAZETTE and its incorporated journals will complete 100 years of continuous publication on May 3. I welcome the opportunity of expressing my congratulations to you on reaching your first centenary. (As one with faith in the future of railways, I deliberately refer to this as merely your first 100 years.)

It is a striking tribute to the excellence and value of your publication that it has continued to flourish from the first years of the steam railway. Although I cannot say that I have had personal knowledge of all the work you have done throughout the whole of this eventful period, I may say that even before I entered the railway service I was one of your readers.

I am sure that THE RAILWAY GAZETTE has taken its full share in maintaining the interest in rail transport, not only of those who, like myself, are directly concerned in its field, but also of the general public, who have always taken an interest in railway activities.

I congratulate all concerned in the production of the journal and in its adaptation to changing conditions, and feel confident that its continued success will be fully warranted.

Mr. E. J. H. Lemon, Vice-President (Railway Traffic Operating and Commercial Section), London Midland & Scottish Railway.

The year 1935, witnessing as it does the centenary of THE RAILWAY GAZETTE and incorporated journals, affords me a welcome opportunity to express my sincere congratulations on the evident success of a journal of undoubted interest and service as a medium for the dissemination of information of national and international importance regarding an instrument of transport which is vital as providing the primary service to industry and the community at large.

The achievement of this success undoubtedly may be attributed to the very high standard which the GAZETTE has always maintained, and to the impartiality and unassailable accuracy with which the large range of subjects, both technical and otherwise, has been presented to its readers. As heretofore, I shall follow with the closest interest and attention the fortunes of this admirable journal and long may they continue to be good ones.

Mr. J. P. Thomas, General Manager, Railways, London Passenger Board.

THE RAILWAY GAZETTE and its progenitors upon attaining the 100th anniversary will receive the grateful thanks of railwaymen the world over for the service consistently rendered to the industry. The publication has searched the field of progress in all countries, and by its authoritative and informative news has exercised a far-reaching influence upon every phase of railway enterprise.

In regard to electrification, THE RAILWAY GAZETTE has reviewed from time to time with impartiality the contro-

versies as to the advantages or disadvantages of the adaptation of electricity to the various traffic needs. It is rather over 50 years ago that the first electric railway received Parliamentary sanction in this country, and 40 years ago since the first electric railway in America (Baltimore & Ohio) commenced. Since that time, and particularly of recent years, electrification of the London Underground Railways, the Southern Railway and the London Midland & Scottish Railway, and upon the Baltimore Railway, has gone ahead, and some 10,000 electric vehicles are in operation to-day on these systems alone. Not only by electrification, but in many other directions, railway transport is undergoing rapid change. A new era is coming in which basic alterations in methods and equipment will be adopted. Railway officials will look forward with confidence to THE RAILWAY GAZETTE to maintain its record in providing that universal information and in the development of science and invention, essential to those responsible for the administration of our railways.

Mr. W. H. Morton, General Manager, Great Southern Railways, Irish Free State.

I congratulate THE RAILWAY GAZETTE on attaining its centenary. I read with special interest the excellent articles which it publishes from week to week on the technical, commercial and legal developments of transport, and I consider that a journal like THE RAILWAY GAZETTE is indispensable to railway progress.

Major Malcolm Speir, M.C., Manager and Secretary, Northern Counties Committee (L.M.S.R.), Northern Ireland.

I was most interested to learn that THE RAILWAY GAZETTE attained its centenary on May 3. That this should be so is a striking tribute to the journal, but is not a matter for surprise to those who are acquainted with it and with the high standard which is constantly maintained.

The GAZETTE is truly a volume of current railway history, a record of all that is happening in the railway world, and for reference purposes as well as for keeping readers abreast with the times it is invaluable to the railway officer.

I am sure the GAZETTE has years of prosperity before it, and that it will continue to live up to its motto of being "read wherever there are railways." Your Diesel and Electric Traction Supplements are of particular interest to us all.

Lt.-Col. J. R. Marryat, D.S.O., M.C., R.E., General Manager, Egyptian Delta Light Railways Limited.

I was very interested to hear that THE RAILWAY GAZETTE will shortly have completed 100 years of continuous publication.

My heartiest congratulations to THE RAILWAY GAZETTE on its fine achievement; may it long continue its interesting and valuable career.

The GAZETTE is so full of good matter that it is rather difficult to say which are the most interesting features, but I should say that the editorials and technical articles, which keep one in touch with the latest developments in railway practice, are perhaps the most useful and interesting, from the railway officer's point of view.

H.E. Mahmoud Shaker Bey, General Manager, Egyptian State Railways, Telegraphs and Telephones, Cairo.

It is with great pleasure that the Egyptian State Railways writes to congratulate THE RAILWAY GAZETTE and its incorporated publications on the attainment of its centenary.

Any newspaper boasting of such an age can claim to rank as a national institution, and in the case of THE RAILWAY GAZETTE, read by railwaymen in all parts of the world, it may justifiably claim place as an international institution.

Long may it continue to do so.

I would add that, in my opinion, the most interesting and the most useful pages are those containing the short editorials, covering, as they do, the whole range of railway work, and invariably indicating where further information on whatever subject is commented upon, may be obtained.

Mr. J. B. Stephens, General Manager, Great Northern Railway (Ireland).

It is with much pleasure that I extend my congratulations to THE RAILWAY GAZETTE on the publication of its centenary number. By its progressive policy THE RAILWAY GAZETTE has enabled railwaymen in all parts of the world to keep abreast of the times, by making them conversant with the latest developments in railway practice in countries other than their own. That it should, after the lapse of a century, still hold its place as the premier railway publication of its kind, particularly in view of the revolutionary changes which have taken place in the transport world during the last 20 years, is no mean achievement, and I send my best wishes for its continued success.

M. Raoul Dautry, Directeur Général du Réseau de l'Etat, Paris.

Suis particulièrement heureux à l'occasion du centenaire de votre revue de vous dire le plaisir et le profit que tout l'état major de mon réseau tire de sa lecture régulière. Avec mes félicitations et mes vœux recevez l'assurance de mes sentiments les meilleurs.

[I am particularly happy, on the occasion of the centenary of your journal, to say with what pleasure and profit my entire staff read it each week. With my congratulations, best wishes and kind regards.]

Mr. George L. Boag, General Manager, Great Southern Railway of Spain.

Most sincere congratulations on the completion by THE RAILWAY GAZETTE and the journals incorporated with it of 100 years of continuous publication. Like the railways, whose interests your publications have so well defended and whose history you have so faithfully recorded, a modest beginning has developed into a very perfect instrument. THE RAILWAY GAZETTE of to-day, with its admixture of financial, administrative, and technical matter, its judicious comments and even its humorous interlude, is so nearly a perfect organ representing all classes of railway work and thought, that it would be difficult indeed to select for praise any particular feature, and even more difficult to suggest any improvement.

Allow me to wish THE RAILWAY GAZETTE a long continuance of the useful life of which the first centenary is so happily a manifesto, with the prosperity which attends all such successful and well-directed enterprises, and may you, Sir, be long spared to continue in your capable direction of the medium which, more than any other, forms the link between the old country and the railwayman abroad.

Mr. R. Bell, C.B.E., Assistant General Manager, London & North Eastern Railway.

Has it occurred to you that, on your method of counting the age of the GAZETTE, the London & North Eastern Railway is 110 years old; yet this oldest of railway lines has just made a world's record for a steam locomotive! And may the GAZETTE, in its centenary form, surpass all previous figures of circulation! As a record of progress in all branches of railway work your paper is valuable because it is always up to date. The exhaustive index which your people compile has through their courtesy helped many railwaymen to obtain information about transport developments both at home and abroad, and its usefulness will increase during your second centenary. Long may the GAZETTE continue to chronicle the performance of railways all over the world!

Mr. H. V. Mosley, Chief Executive Officer for New Works and Parliamentary Business, London Midland & Scottish Railway.

Please accept my best wishes for the continued and ever-increasing success of THE RAILWAY GAZETTE. In almost 40 years of railway service I have found in its pages news and information from all parts of the world upon the widest possible range of railway subjects, including developments in practice, which are not merely of interest, but of great educational value to those concerned in the railway industry.

Mr. C. R. Dashwood, Assistant General Manager, Great Western Railway.

May I add to the congratulations you must be receiving from all quarters on the celebration of the centenary of your paper. Its production is excellent—its contents reliable, instructive and interesting—and I am happy to wish you and your publication the continued success so thoroughly merited.

Mr. Gilbert S. Szlumper, C.B.E., Assistant General Manager, Southern Railway.

I am happy to send you congratulations not only on this notable anniversary, but on the useful work you are doing in the railway world. We look to THE RAILWAY GAZETTE as an important means of keeping ourselves abreast of the times by means of its excellent articles and illustrations, and of maintaining touch with railway affairs and friends across the seven seas. Long may you, your colleagues and your GAZETTE flourish.

Mr. Thos. Hornsby, Divisional General Manager (North Eastern Area), London & North Eastern Railway, York.

I hear that THE RAILWAY GAZETTE is on the eve of celebrating its centenary, and as I have the privilege of administering railways in the area where railways were born, perhaps you will permit me to send you, from one centenarian to another, my congratulations on the past achievements of THE RAILWAY GAZETTE and my good wishes for its continued success in future years.

I suppose that the difference between an ordinary newspaper and a gazette is that the former may sometimes be imaginative, but the latter must always be authoritative. It is with that feeling in mind that we railwaymen of North-Eastern England read our RAILWAY GAZETTE each week.

The GAZETTE is an essential part of every railway officer's equipment. It keeps him in touch with the greater railway world outside, and in that way he is able to test the theories of others in his own domain and pass on his successes for the benefit of the railway world in general. Long may the GAZETTE continue this valuable work.

Mr. George Mills, Divisional General Manager (Scottish Area), London & North Eastern Railway.

"Age cannot wither nor custom stale" the infinite variety of THE RAILWAY GAZETTE, nor the pleasurable anticipation with which its readers open its pages each week. Its articles are informative and authoritative, and its judgment invariably sane. Its opinions carry weight because they invariably select the essential issue from the irrelevancies which so frequently surround railway problems.

No railwayman can exist to-day unless he is up to date, and to be up to date he must be a reader of THE RAILWAY GAZETTE, to which its appreciative readers extend cordial greetings on the attainment of a worthy centenary. May its next 100 years of valuable work be equally successful in disseminating useful knowledge and wise judgment.

Mr. G. F. Thurston, Divisional General Manager (Southern Area), London & North Eastern Railway.

To have chronicled faithfully, as they have occurred, the material events and changes in the varied history of railways from the early days of the "railway mania," when the British Parliament was inundated with Bills promoted for the purpose of opening up this country to the new means of transport, to the present day when the railway mileage of the world amounts to nearly three-quarters of a million miles, is indeed a noteworthy achievement, and THE RAILWAY GAZETTE is to be congratulated on attaining its century with such a record behind it.

It is a journal which both reports accurately and completely, and presents attractively the news of interest connected with the industry it represents, and I trust it may long continue to perform the useful purpose it serves in keeping all who are in any way associated with railways in touch with what is taking place on those undertakings.

Mr. J. Ballantyne, Chief Officer for Scotland, London Midland & Scottish Railway.

I should like to take this opportunity of congratulating THE RAILWAY GAZETTE on the attainment of its centenary.

It is a remarkable achievement for a trade journal, and the proprietors have every reason to be proud in the knowledge that the magazine has for so long been of the utmost assistance to railway officials.

The standard of the publication is very high, and in enabling us to keep in touch with all the developments in the railway world it serves a very useful purpose. With every good wish for the future success of THE RAILWAY GAZETTE.

Mr. G. Cole Deacon, Secretary, The Railway Companies' Association.

I should like to have the privilege of associating myself with your many other readers who, I am sure, will be congratulating you upon the occasion of the special Centenary issue of your useful and interesting journal.

To anyone interested in keeping abreast of the times on the many and varied matters appertaining to railways, THE RAILWAY GAZETTE is indispensable, and I would pay a special tribute to the impartial, lucid and understandable manner in which these subjects are presented.

Mr. E. E. Painter, Principal Assistant to Secretary of Railway Clearing House.

I quite well remember the frequent references made by the late Mr. E. G. Rider (formerly Assistant Secretary in this Establishment) to the old *Railway Fly Sheet* mentioned in the table given in your issue of May 3, and that forms a link which takes this Office through the greater part of your 100 years.

You appear to thrive on absorption and now hold the position of being the premier railway journal; always readable, informative and well illustrated.

At the beginning of your new era I wish you "Bon Voyage" and may your next century be even more successful than the past.

Mr. C. E. R. Sherrington, Secretary, Railway Research Service, Westminster.

It is as far a cry from *The Railway Magazine* of May, 1835, later known as *Herapath's Journal*, to THE RAILWAY GAZETTE of 1935, as from the Liverpool & Manchester Railway to the four great British railways of to-day.

Throughout its long and honoured career THE RAILWAY GAZETTE has helped to guide and mould railway policy, and of recent years has broadened its interests so as to contain most useful information on road, air and water transport, as well as pure railway information. Just as the British railways have gradually developed into transport concerns in the widest sense of the term, so has THE RAILWAY GAZETTE kept pace with those developments. Each of the British railways is built up on the foundations of a multitude of smaller ancestors, THE RAILWAY GAZETTE can claim almost as long a distinguished lineage. Herapath's engravings and plans have been replaced by excellent photographs. May his record in June 1835, that £192 was the price of a £100 share of the Liverpool & Manchester Railway, be repeated in regard to existing railway shares in issue of THE RAILWAY GAZETTE during coming years.

The wish for success to THE RAILWAY GAZETTE centenary will be echoed wherever there are railways.

Lord Hirst, Chairman, General Electric Co. Ltd.

It gives me the greatest pleasure to join the ranks of those who send you congratulations on your centenary. The part THE RAILWAY GAZETTE has played in the past has been most useful both to the railways and to the interests that serve the railways.

A new task will be coming to you to deal with the electrification of some lines. I am sure you will deal with it with the same fairness that you have dealt with similar problems in your long and honourable history. You have my best wishes for your future success.

Sir George Beharrell, D.S.O., Managing Director, The Dunlop Rubber Co. Ltd.

Allow me to congratulate you on the centenary of continuous publication. From my own observation during many long trips abroad, I can subscribe to the claim that THE RAILWAY GAZETTE is read wherever there are railways. You have reached and maintained an exceedingly high standard, and I regard the GAZETTE as a model technical journal.

Mr. Bernard Docker, Chairman, The Birmingham Railway Carriage & Wagon Co. Ltd.

I understand that THE RAILWAY GAZETTE and the journals now incorporated therewith complete 100 years of continuous publication on May 3 next.

I should like to offer my congratulations on the attainment of this century. I consider that THE RAILWAY GAZETTE is performing a useful service to the railway interests in all parts of the world in placing on record new developments and in presenting them to railway officials and others employed in the industry in such an interesting and readable form.

With my best wishes for your continued prosperity and success.

Sir Hugh Reid, Bart., C.B.E., V.D., LL.D., Chairman and Chief Managing Director, North British Locomotive Co. Ltd.

Although THE RAILWAY GAZETTE, with the other publications now incorporated in that journal has attained 100 years of continuous issue, it shows no sign of weakness or decay, and has recently given evidence of new activities and progress.

As a journal occupying an intermediate place between the purely technical and the more popular engineering periodicals, THE RAILWAY GAZETTE is in the happy position of providing current news, both technical and commercial, in a reliable and readable form, and it should therefore have an assured future.

Mr. Sidney E. Garske, President, Institute of Transport.

I learn with much interest that THE RAILWAY GAZETTE celebrates its centenary during my year of office as President of the Institute of Transport. I feel that I should like to express my appreciation of the work done by the journal.

THE RAILWAY GAZETTE, together with other railway journals since absorbed, has been continuously published throughout the whole history of railway development, and it has served transport by recording, in all parts of the civilised world, new developments and practices in regard to this very important form of transportation. In these days of world trade adversity it is more important than ever to be up to date. There is less margin of profit out of which to cover up inefficiency, and in such circumstances the work of the technical press assumes a practical importance, in addition to the supply of interesting matter, which is its chief function in days of prosperity.

I trust that THE RAILWAY GAZETTE may long continue to carry out its valuable work, and that it may prosper accordingly.

Mr. A. Winter Gray, Secretary, Institute of Transport.

Please permit me to add my congratulations to the vast number you will deservedly receive upon the completion of one hundred years' uninterrupted publication of THE RAILWAY GAZETTE and the journals incorporated with it. This is an achievement of which not only you but the technical press of this country as a whole and British railwaymen can well be proud.

As you justly claim, THE RAILWAY GAZETTE is known, read and consulted wherever there are railways and interest in railways. Its wide appeal and high reputation, backed by so many years' service, make it an Imperial journal and, indeed, an international journal.

All who have enjoyed reading THE RAILWAY GAZETTE, who have profited by reading it, and who have found it a mine of information for consultation, will, I am confident, wish it, as I do, continued success and an ever-widening sphere of business.

May 10, 1935

Sir Felix J. C. Pole, Chairman, Associated Electrical Industries Limited.

In congratulating you heartily—as I do—on the completion of your 100 years of continuous publication, I should like to offer the opinion that the railway industry is also to be congratulated on having the benefit of your most effective journal. If one reads THE RAILWAY GAZETTE one can keep thoroughly up to date in railway matters, and I know of no other large industry that is so well served by one publication.

Sir Philip Nash, K.C.M.G., C.B., Chairman, Great Universal Stores Limited.

I should like to offer my congratulations to THE RAILWAY GAZETTE on its completion of 100 years' publication. I have been a constant reader of THE RAILWAY GAZETTE for a great number of years, and I have always considered that it performs great service to railway interests generally in that it brings to notice inventions, improvements, and new points of view, all of which are highly important to railway officials.

I want to emphasise particularly the service that THE RAILWAY GAZETTE renders to railway officials serving overseas. I know from personal experience the eagerness with which railway servants read the GAZETTE, which will always be found on the table and reading rooms of Institutes where such men congregate. You have all my best wishes for the continued success of THE RAILWAY GAZETTE.

Mr. Ashley Brown, General Secretary, British Railway Stockholders' Union.

Nothing is of more importance to the railways than well-informed opinion and just and balanced criticism. And because this is so, we owe to THE RAILWAY GAZETTE a debt that can suitably be acknowledged on this important anniversary. For the GAZETTE is always well informed and never too censorious. It tells us what is being achieved by others, pats the companies on the back when they deserve it, and at other times does not forget that it is dealing with men subject to the frailties of human nature. May it prosper. May its prosperity reflect an increasing prestige and usefulness in the industry we all serve.

M. Riboud, Comité de Direction, Grands Réseaux de Chemins de fer français, Paris.

Abonnés depuis de nombreuses années à la RAILWAY GAZETTE, les Grands Réseaux de Chemins de fer français saisissent avec plaisir l'occasion de son centenaire pour rendre hommage à la sûreté de la documentation de votre journal ainsi qu'à la grande diversité et la très réelle clarté de ses articles. Votre Rédacteur en Chef a soin de prendre fréquemment contact avec les choses et les gens des autres pays et les Réseaux français ont eu plusieurs fois déjà l'occasion d'apprécier l'agrément de leurs relations avec lui.

Ils sont très sensibles, d'autre part, à la sympathie avec laquelle la RAILWAY GAZETTE met en relief, dans un souci de grande objectivité, ce qui se fait de bien en France dans le domaine des Chemins de fer; ils expriment le vœu que la revue continue à contribuer, comme elle l'a fait jusqu'ici, au progrès des Chemins de fer.

Tous les articles de la revue sont lus avec intérêt; parmi eux, ils notent spécialement ceux qui font connaître des méthodes nouvelles ou des progrès réalisés par les Réseaux anglais d'abord et aussi par les autres Réseaux étrangers.

[Subscribers of many years' standing to THE RAILWAY GAZETTE, the Grands Réseaux de Chemins de fer français are glad to take the opportunity of its centenary to congratulate it upon the accurate information and great diversity, as well as the clarity of its articles. Your Chief Assistant Editor takes pains to keep in close touch with things and people of other countries, and the French railways have several times had the pleasure of proving the friendliness of their relations with him.

Our systems appreciate the way in which THE RAILWAY GAZETTE announces improvements taking place in France, and hope that the journal will continue to contribute to railway progress, as it has ever done.

Every article in the review is read with interest. Amongst them special attention is given to those which describe new methods and progress realised on English railways, as well as those abroad.]

Mr. W. J. Stevens, Stock Exchange, London.

In offering my congratulations to THE RAILWAY GAZETTE, I am proud to recall that since the year 1892 I have been a contributor from time to time to *The Railway News* and *The Railway Times*, and latterly to THE RAILWAY GAZETTE.

My chief criticism of our railways has always been that they have posed too much as a "silent service," and only in recent years have they come to realise the essential need for publicity and salesmanship. In making this desirable change, THE RAILWAY GAZETTE has played a foremost part. Much advantage will be gained by the investors in railways, as well as the public they serve, if the more recent methods of displaying their wares in an attractive way are continued and extended. Our railway services are the most efficient, the safest, and the cheapest in the world. Why not say so?

Mr. Ralph Cope, Chief Accountant, Great Western Railway.

Will you permit me to offer you my congratulations on THE RAILWAY GAZETTE having completed 100 years of continuous publication, and may I express the hope that it will long continue to perform the very useful service of providing reliable information not only in respect of the railways in England, but also of those in the Colonies and abroad.

Mr. A. Howie, Joint Accountant, Southern Railway.

Hearty congratulations to THE RAILWAY GAZETTE upon the celebration, in this Jubilee Year, of its centenary. As an institution your journal is as old as the railways. Like them it is ever young and up to date, giving its public the best of services, and always faithful to the same high traditions of efficiency, dependability and courtesy. Long may we continue week by week to welcome its appearance.

Mr. C. H. Newton, Chief Accountant, London & North Eastern Railway, King's Cross Station.

Permit me to offer you my hearty congratulations on the attainment of THE RAILWAY GAZETTE's centenary. To have sustained the interest and support of railway administration for a period of 100 years is truly a noteworthy achievement. One admires THE RAILWAY GAZETTE not only by reason of its very informative articles, but for the unfailing tact and good taste displayed in its editorial comments on matters of current interest. To the railway officer of every rank your periodical is of the utmost interest and value, and I sincerely trust that it may continue to prosper.

Mr. E. Taylor, Chief Accountant, London Midland & Scottish Railway.

It is great pleasure to me to be able to congratulate you upon the centenary of continuous publication of THE RAILWAY GAZETTE and its allied journals, and to say how great is the interest and enjoyment I have derived from the weekly issues over a long period of railway service.

Perhaps I may add, as a testimonial from a somewhat unusual source, that I meet with the serious disapproval of my daughter if, upon publication, I fail to place the week's issue in her hands for interested perusal.

Mr. A. G. Hubbard, Solicitor, Great Western Railway.

On the occasion of THE RAILWAY GAZETTE's centenary I should like to express my appreciation of the outstanding ability and accuracy which characterise its reports and articles dealing particularly with the legal aspect of the many important matters, affecting the railways from time to time. I tender my hearty congratulations and best wishes for your continued success.

Mr. I. Buchanan Pritchard, Chief Legal Adviser, London & North Eastern Railway.

I am glad of this opportunity on the occasion of the centenary of THE RAILWAY GAZETTE to express my appreciation of the services which that journal, throughout its long career, has rendered to the railway industry at large. As a journal of accurate reference it is indispensable, but quite apart from the accuracy of its purely technical information, it always presents its many and varied subjects in so attractive a manner as to appeal to the mind of the layman as well as to that of the technicist.

Mr. J. S. Anderson, Secretary and Treasurer, London Passenger Transport Board.

I am happy to have this opportunity of joining in the congratulations to THE RAILWAY GAZETTE on the completion of its first one hundred years of publication, and of expressing my appreciation of the valuable service rendered by you as Editor and all who contribute towards the production week by week of a journal which, in these rapidly changing days, can be relied upon to reflect the latest developments in the railway world. I trust that the coming years may bring an even greater measure of success to THE RAILWAY GAZETTE.

Mr. F. R. E. Davis, Secretary, Great Western Railway.

I am most interested to hear of the 100th anniversary of the journals now incorporated in THE RAILWAY GAZETTE, and as the centenary of the Great Western Railway Company occurs shortly afterwards, the year 1835 was obviously a vintage one. As a reader and admirer of your paper for over 25 years, may I say how much I welcome this opportunity of paying a tribute to the invaluable services which you render, not only to those connected with the railway transport industry, but also to those whose prosperity is allied to it.

Mr. F. Fighiera, Secretary, Central Argentine Railway.

To grow old gracefully is the ambition of every right-minded entity. THE RAILWAY GAZETTE has achieved this purpose, but the respectability and dignity of a century of unceasing energy and untiring effort leave it younger, fuller of energy, information and education, and more efficient than at any stage of its honourable life of 100 years. We all, in Argentina as in London, abroad as at home, look to it every week for a peep into the world's developments and activities in transportation and traction, be it on land, on or under water, or in the air. Let it retain its title of THE RAILWAY GAZETTE, because it will thus remain a constant reminder to us of what railway administration and operation have become to-day; successfully meeting and coping with the thousand and one new problems which this age of wireless communication and transmission have imposed upon railway management and incidentally on journalistic enterprise. Hearty congratulations, therefore, on your past success, and many even happier returns of May 3 be yours, with strength and power to continue leading and guiding our great profession of railroading in all its ramifications.

Mr. O. Glynne Roberts, Secretary of the Company and Assistant to President, London Midland & Scottish Railway.

Please accept my sincere congratulations on the hundredth anniversary of your birthday. On the title pages of your predecessors it was the custom to quote the following dictum of Bishop Hall:—

"Lord Bacon saith truly, there are three things which make a nation great and prosperous—a fertile soil, busy workshops, and easy conveyance for men and commodities from one place to another; to which let me add, knowledge and freedom."

If Bacon were writing to-day I am sure he would include the press, who are the disseminators of knowledge and the champions of freedom, and no railway administration could carry on to-day without the services of THE RAILWAY GAZETTE, which is "Read wherever there are Railways."

Mr. James McLaren, Secretary, London & North Eastern Railway Company.

It was with deep interest I read the history of THE RAILWAY GAZETTE and the publications now incorporated therewith appearing in your issue of the 3rd inst., and to you and your colleagues I tender heartiest congratulations on the magnificent record achieved by that issue.

Consistently abreast with the times and fully informed on railway matters, the splendid service which you and your predecessors have, through the medium of the GAZETTE, rendered to all interested in railways is recognised and fully appreciated, especially by the officers entrusted with the administration of railway undertakings.

I feel sure that under the present management the GAZETTE will maintain the high standard it has set, and in this work you and your staff merit the best wishes and support of your subscribers.

Mr. F. H. Willis, Secretary, Southern Railway.

Very hearty congratulations to THE RAILWAY GAZETTE on attaining its century! It is a great achievement, and has only been secured by the ability and enterprise of those who have directed its policy. THE RAILWAY GAZETTE has made an invaluable contribution to the development of the railway industry in all parts of the world by the efficiency with which it has catered for the needs of those engaged in the management and conduct of the various railway undertakings. Long may it continue its sphere of usefulness!

Mr. Arthur Towle, Controller, L.M.S. Hotel Services.

I send you my congratulations on the uninterrupted publication of THE RAILWAY GAZETTE and its incorporated journals for 100 years.

I am quite sure that the value of your publication is well recognised and appreciated by everyone interested in railway undertakings, and I wish you and your journal continued prosperity.

Mr. A. C. Carr, Messrs. Sir John Wolfe Barry & Partners, Westminster.

I send you my congratulations on the occasion of your centenary. THE RAILWAY GAZETTE has been taken in this office for many years and has proved a ready means of keeping in touch with railway developments.

During my service on Indian railways I read THE RAILWAY GAZETTE regularly, and I am sure all overseas railway men will profit by a regular perusal of your publication. I wish THE RAILWAY GAZETTE continued success in the service which it so efficiently renders to the railway world.

Sir Harley H. Dalrymple-Hay.

I would like to join with others in offering THE RAILWAY GAZETTE congratulations on the completion of 100 years of publication and best wishes for a successful future. I certainly consider that THE RAILWAY GAZETTE performs a most useful service to railway interests and is well deserving of support.

Messrs. Sir Douglas Fox & Partners, Westminster.

We would ask you to accept our good wishes for your long-lived and most useful journal.

Sir Brodie H. Henderson, K.C.M.G., C.B., Messrs. Livesey Son & Henderson, 14, South Place, E.C.2.

I should like to congratulate you on reaching 100 years of continuous publication, more particularly as you maintain such a high standard. Your paper always contains matters of great interest and which are extremely useful to all interested in railway questions. I hope you will continue your successful career for many years.

Mr. C. Peter Sandberg, C.B.E., 40, Grosvenor Gardens, S.W.1.

THE RAILWAY GAZETTE and the journals incorporated with it undoubtedly deserve, and will assuredly receive, congratulations from every part of the world on having completed 100 years of continuous publication.

It is difficult to contemplate:—

- (1) What the world would be like without railways.
- (2) What the railway world would do without THE RAILWAY GAZETTE.

Every good wish for continuous success.

Sir Seymour B. Tritton, Messrs. Rendel, Palmer & Tritton, Westminster.

I wish to add my congratulations to those which you have no doubt already received on completion of 100 years' publication of THE RAILWAY GAZETTE. We have taken THE RAILWAY GAZETTE in my office for some years, and I have always found the articles and drawings of great value, more especially those relating to the Indian Railways and the latest developments in diesel traction.

Your publication is circulated to all our partners and senior members of our staff in turn, and a note is made of articles which are of special interest to us, both professionally and personally. I will only add that I wish THE RAILWAY GAZETTE every success, and a continuation of its useful task in dealing with latest world-wide railway developments.

Mr. Bruce G. White, Messrs. Robert White & Partners, Westminster.

One hundred years of continuous publication is a considerable achievement, and in the case of a journal specialising in matters connected with railways it is of particular interest, as it means that its life is little short of that of railways, whose development it chronicles.

THE RAILWAY GAZETTE fills a useful place in the railway field and does not confine itself to reporting development and practice in this country only but deals with the field of railways throughout the world. That it recognises the importance of moving with the times is indicated by the publication of the monthly supplements dealing with electric traction and diesel electric traction, which subjects are undoubtedly better presented in such a form than by occasional articles in the body of the weekly publication.

With this evidence of moving with the times, it is likely that THE RAILWAY GAZETTE will continue to fulfil a useful purpose and record all developments which may take place on railways.

Mr. W. L. Watson, Chief Engineer (Contracts), Crown Agents for the Colonies.

At the end of 100 years of continuous publication THE RAILWAY GAZETTE is very much to the fore, and it is obvious that the Editor is alive to the importance of keeping readers in close touch with the latest railway practice throughout the world. As an example of enterprise, an excellent Diesel Supplement is included every fourth week for the benefit of all those at home and abroad who are interested in the developments of this form of traction.

The present high standard of THE RAILWAY GAZETTE should ensure continued prosperity for this valuable technical publication, which, on the occasion of its centenary, carries the good wishes of its numerous readers in many lands.

Mr. C. B. Collett, O.B.E., Chief Mechanical Engineer, Great Western Railway, Swindon.

I have always found THE RAILWAY GAZETTE a most useful and reliable publication, and value very highly my file of its volumes. These go back a great number of years and form a most excellent chronological record of railway progress, and I send you my heartiest congratulations and good wishes for your continued success.

Mr. W. S. Graff Baker, Chief Mechanical Engineer (Railways), London Passenger Transport Board.

It gives me great pleasure to tender my very sincere congratulations on the attainment of the 100th anniversary of THE RAILWAY GAZETTE and incorporated journals, and I trust that the useful services performed by THE RAILWAY GAZETTE to all interested in railways may be continued for many years to come.

Mr. R. E. L. Maunsell, C.B.E., M.A., Chief Mechanical Engineer, Southern Railway.

In congratulating you upon the achievement of the centenary of THE RAILWAY GAZETTE, I would like to take this opportunity of saying that your journal has always appealed to me as being most interesting and informative, noteworthy for its accuracy and as providing a thoroughly comprehensible view of events taking place throughout the railway world. When I require information on any point concerning railway operation, I can usually find what I want in one or other of the issues of THE RAILWAY GAZETTE.

Mr. A. W. Harty, Chief Mechanical Engineer, Great Southern Railways, Inchicore.

I should like on the completion of 100 years of continuous publication of THE RAILWAY GAZETTE to express my appreciation of its usefulness and value to railway officers of all departments, who find in it each week matters of extreme importance covering not alone the United Kingdom but Overseas, thus keeping those widely separated in close touch with the progress of new developments and practices of the premier system of transport.

May I also congratulate you on the special supplements you so frequently issue, which are full of interest not alone to railway officials, but to the public generally.

Mr. H. N. Gresley, C.B.E., Chief Mechanical Engineer, London & North Eastern Railway.

The continuous publication for 100 years of THE RAILWAY GAZETTE and the journals incorporated with it affords an appropriate opportunity to express my congratulations on this fine record.

As a regular reader I appreciate in particular the up-to-date and accurate information of new railway developments, not only in this country, but all over the world.

Mr. W. A. Stanier, Chief Mechanical Engineer, London Midland & Scottish Railway.

In offering my congratulations to THE RAILWAY GAZETTE on attaining its centenary, I would not like this opportunity to pass without expressing my very great appreciation for the help that I have received personally from its articles on technical subjects, and for the general railway information it contains for all branches of the service.

The way in which THE RAILWAY GAZETTE gets hold of the news that matters, and is able to put this in a concise and forcible manner, has always appealed to me, and, to a busy man, it enables one to assimilate very quickly what others are doing.

Mr. R. Carpmael, Chief Engineer, Great Western Railway.

I have much pleasure in expressing my view that the centenary of THE RAILWAY GAZETTE and its incorporated journals sets up a prominent milestone on the long and broad highway of railway education and record which THE RAILWAY GAZETTE connotes in the minds of railwaymen.

I wish you continued success on the lines of your present policy, service and achievements, which serves to keep railway officers and staff abreast of the rapid development of these times in all branches of railway work.

Mr. Arthur R. Cooper, Chief Engineer, London Passenger Transport Board.

My congratulations to THE RAILWAY GAZETTE and its incorporated journals on its centenary. The GAZETTE is a publication which I find of particular interest and I always make a point of reading it. The special articles which have been published from time to time in connection with our undertakings form a valuable record of such works.

It must be a source of pride and satisfaction to you and your staff to look back upon the progress that has been made in your publications and the very high reputation created. My best wishes for your continued success.

Mr. C. J. Brown, The Engineer (Southern Area), London & North Eastern Railway.

The fact that THE RAILWAY GAZETTE has reached its centenary—though not under this title throughout the whole of the period—is proof of a long-sustained and uniform high standard of excellence and advancement with the times, which has merited and received the approval and support of its successive subscribers and which continues to be so marked a feature of its present management.

As a railway journal recording in its own particularly attractive form information—whether general or technical—on railway and kindred subjects it deservedly occupies a very special place in the railway world, and I am sure its many readers would wish that it may long continue to carry on its high traditions and prosper.

Mr. W. A. Fraser, Engineer (Scotland), London & North Eastern Railway.

In any short note of appreciation it is difficult to sum up the unique position which THE RAILWAY GAZETTE holds in the estimation of railway officers and staff, particularly the chief engineers, their district officers and technical staff, who invariably turn to its pages for information as to the latest practice in railway engineering.

THE RAILWAY GAZETTE has become what might be called the weekly manual of railway scientific progress, enabling railway engineers to keep in touch with the latest developments on other systems, both at home and abroad, and I am sure that this policy will remain, and that the GAZETTE will continue to be indispensable to its readers.

Mr. G. Ellison, Chief Engineer, Southern Railway.

I congratulate you on the completion by THE RAILWAY GAZETTE of its centenary of continuous publication. I have read it regularly for many years, and have found it an increasingly useful medium for keeping in touch with developments and practice on railways at home and abroad.

Mr. W. K. Wallace, Chief Civil Engineer (Way and Works), London Midland & Scottish Railway.

I offer you my congratulations on the centenary of THE RAILWAY GAZETTE and its incorporated journals. The contents fulfil the promise of the title, and as a comprehensive record of all forms of railway activity, its interest to railwaymen of all grades, and in all departments, is as universal as its position is unique. You, and your staff, have every reason to be proud of a journal which has covered practically the whole life of one of the greatest industries in the world.

Mr. Conrad Gribble, Assistant Engineer (New Works and Bridges), Southern Railway.

For as long as any railway officer can remember, THE RAILWAY GAZETTE has been a source of railway news and a means of pooling technical information for general distribution and use. It is now more efficient than ever, and the occasional dilution of its more serious contents with a solvent of humour adds to its interest. I wish it continued success.

Mr. A. S. Quartermaine, Assistant Chief Engineer, Great Western Railway.

The advent of 100 years of continuous publication culminating in THE RAILWAY GAZETTE in its present form, outstanding and unrivalled, is an attainment of which you may be rightly proud. I cannot refrain from saying how well deserved is the success achieved by this unique paper, affording as it does prompt and reliable information on the most recent railway methods, productions, and results. Its value is clearly due to the exceptional care taken in its preparation to avoid inaccuracies or misleading statements.

You must have a host of friends who are grateful to you for what you do to help and interest us, and I join with them in congratulating you, thanking you, and wishing you continued success.

Mr. C. E. Fairburn, Electrical Engineer, London Midland & Scottish Railway.

I would like to congratulate THE RAILWAY GAZETTE on having obtained its century of continuous publication. The matter in the GAZETTE is always interesting, and its recent enterprise in producing Electric Traction and Diesel Traction Supplements has filled a much-needed want. They offer very easy and convenient means of keeping in touch, not only with developments in this country, but developments abroad.

These supplements fulfil a very useful purpose indeed.

Mr. A. F. Bound, Signal and Telegraph Engineer, London Midland & Scottish Railway.

Very hearty congratulations on the centenary of THE RAILWAY GAZETTE, and its incorporated journals. I feel sure that every railwayman who takes an interest in his profession looks forward to your weekly issue as a stimulus to his knowledge of what is taking place, both at home and also abroad, and is thereby enabled to keep abreast of the times, secure in the knowledge that the information conveyed is both accurate and authentic.

Long may your journal prosper, to the benefit of all concerned.

Mr. C. Carslake, Assistant Signal and Telegraph Engineer (Southern Area), London & North Eastern Railway.

My congratulations to THE RAILWAY GAZETTE and its incorporated journals on the successful completion of 100 years' service in the cause of transport.

Transport undertakings the whole world over owe THE RAILWAY GAZETTE a very great deal in the service it has rendered not only to railways but in keeping up to date in all the great advance of modern road and air transport. May the journal continue to advance to another centenary with every success and prosperity.

Mr. A. Raworth, Electrical Engineer (for New Works), Southern Railway.

It interests me immensely to hear that you are about to celebrate your centenary. I congratulate you, not only upon this long record of success, but also upon your continued progression and your indispensability to railwaymen all over the world.

Mr. W. S. Every, Signal Engineer, London Passenger Transport Board.

My heartiest congratulations to you on the centenary of THE RAILWAY GAZETTE. The journal is read with keen interest by myself and my staff, with the feeling that it contains the latest information on the progress in railway technical matters. My best wishes for the journal's prosperity and success.

Lt.-Col. G. L. Hall, O.B.E., Assistant Engineer (Signals and Telegraphs), Southern Railway.

Please accept my congratulations on the occasion of the centenary of THE RAILWAY GAZETTE. As a publication it certainly stands alone in striking the happy mean between the popular and the highly technical, and is therefore of particular value, not only to all branches of the railway service, but also to the large numbers of the general public who take an intelligent interest in railway working. I send my best wishes to the paper and its staff for a happy and prosperous future.

Mr. C. M. Jacobs, Signal Engineer, Great Western Railway.

Heartiest congratulations on your centenary. Yours has been a wonderful achievement.

Mr. A. E. Tattersall, Signal and Telegraph Engineer, North Eastern Area, L.N.E.R., York.

My heartiest congratulations to THE RAILWAY GAZETTE and its incorporated journals on the completion of 100 years of publication. I feel sure all will agree that THE RAILWAY GAZETTE performs a most useful service by bringing before its readers news of the operation, developments and changes, not only in the railways of this country, but in those throughout the world.

The articles on signalling practices and alterations have always been of peculiar interest, and I feel that I must pay a well deserved tribute to the accuracy and care with which they have been compiled. May your publication go forward on its second century with every good wish for its prosperity and an increased circulation.

Mr. Kenelm Kerr, Assistant General Manager (Staff), London & North Eastern Railway.

THE RAILWAY GAZETTE can be sure of the congratulations of all connected with railways upon the notable achievement of completing a century of continuous publication. THE RAILWAY GAZETTE is equally to be congratulated upon solving so successfully what must be a very real problem in journalism—the problem of maintaining week by week the high standard it has set in the completeness of its information, the interest of its articles, and the notable excellence of its photographs.

Mr. J. F. Lean, Principal Assistant to General Manager, Great Western Railway.

I should like to take the opportunity of conveying my hearty congratulations to THE RAILWAY GAZETTE on the completion, with its incorporated journals, of 100 years continuous publication.

It is a very fine record and during this long period there have, of course, been many varied changes in the Transportation Industry, and the files of the papers must contain a very complete record not only of the hopes and aspirations of the industry, but of its achievements.

THE RAILWAY GAZETTE can claim to have always strived, and successfully so, to present to their readers calm and reasoned statements of the railway position in all its aspects, and in looking back with satisfaction over a century of good endeavour you can look forward with confidence to another century of public service to the Railway Industry. With all good wishes.

May 10, 1935

Mr. G. L. Derbyshire, Chief Officer for Labour and Establishment, London Midland & Scottish Railway.

Will you accept my hearty congratulations on the centenary of THE RAILWAY GAZETTE and its incorporated publications, which was achieved on May 3, 1935.

I have the highest regard for the GAZETTE because it not only provides each week transport news from all parts of the world on every phase of railway activity, but its articles are reliable, interesting and thorough. This appeals to me particularly in regard to the reports on matters relating to the conditions of service and welfare of railway staff. I wish your journal continued success.

Mr. J. Bromley, General Secretary, Associated Society of Locomotive Engineers and Firemen.

I notice that in May THE RAILWAY GAZETTE will have attained its century of continuous publication, and I feel I must write and congratulate you on that achievement.

THE RAILWAY GAZETTE I have always regarded as a very valuable technical journal, always well informed, up to date in everything new affecting railways and other forms of transport, useful both to the student and the "old hand."

The reputation of THE RAILWAY GAZETTE is world wide, and I myself have discussed it in countries as far apart as Mexico and Russia, and everywhere its information is regarded as reliable and thorough.

Once again, hearty congratulations and best wishes for future progress.

Mr. John Marchbank, General Secretary, The National Union of Railwaymen.

May I offer my hearty congratulations to THE RAILWAY GAZETTE on the attainment of its 100th anniversary. As General Secretary of the largest Railway Trade Union, I find it indispensable in keeping me informed of what is taking place on the railways at home and abroad, and it is also invaluable to my officers. Its excellence of production and its wide range of railway subjects, in my opinion, places THE RAILWAY GAZETTE in the forefront of the best trade and technical journals.

I hope it will continue publication for very many years to come, and that its circulation will continue to increase.

Mr. A. G. Walkden, J.P., General Secretary, Railway Clerks' Association.

I am certain that everyone who sees THE RAILWAY GAZETTE will extend very warm congratulations to those associated with a production which this year completes a century of continuous publication. It may be said with truth that this well-produced journal has fully justified its existence. Its record of news concerning developments in the railway world and throughout transport generally is dependable and up to date, and its editorial comments are noteworthy for their fairness and interesting presentation.

I believe all who are in any way connected with our great transport services will wish THE RAILWAY GAZETTE "many happy returns!"

Mr. H. Haigh, F.C.I.S., Secretary, The Railway Convalescent Homes.

On behalf of the Trustees and all connected with the Railway Convalescent Homes, I send you my heartiest congratulations and good wishes on the completion of 100 years' continuous publication of THE RAILWAY GAZETTE and the journals incorporated with it. Your record is one of which you have just cause for pride, in addition to being one of absorbing interest, covering, as it does, almost the whole history of steam-operated railways.

The Railway Convalescent Homes are particularly indebted to THE RAILWAY GAZETTE for its unfailing courtesy and willingness to spare a portion of its valuable space for Homes' affairs, and for the illuminating reports it provides of any matter of importance in the Homes' history.

May THE RAILWAY GAZETTE prosper exceedingly, and continue for another 100 years to serve the railway world as efficiently as it does today!

Mr. H. C. Walton, General Secretary, Railway Benevolent Institution.

May I be permitted on behalf of the Railway Benevolent Institution to tender our heartiest congratulations to THE RAILWAY GAZETTE on its completion of a century of continuous publicity, a record of which you are entitled to feel justly proud. It speaks volumes for the high standing of THE RAILWAY GAZETTE that its appearance is eagerly looked for each week and its interesting and informative articles widely discussed.

In the years that have passed there was an intimate interest between THE RAILWAY GAZETTE and this Institution owing to the fact that a former Secretary, Mr. W. F. Mills, was, I believe, founder and editor of *The Railway Fly Sheet*, which subsequently became *The Railway Official Gazette* and incorporated with your publication via the medium of *The Railway News*; our congratulations are, therefore, not a mere expression of words.

In conclusion, I should like to take this opportunity to offer our grateful thanks for the very great help your journal has always been ready to offer by affording us the hospitality of your columns in an endeavour to further the cause of this Institution and your generous material help in this direction is, I assure you, most sincerely appreciated.

Lt.-Col. A. H. L. Mount, C.B., C.B.E., Chief Inspecting Officer of Railways, Ministry of Transport.

I am very glad to have an opportunity of adding my congratulations on the centenary of THE RAILWAY GAZETTE. I read this journal weekly with great interest, and find the descriptions of new equipment and methods of operation at home and overseas very valuable, both at the time and for subsequent reference. I offer my best wishes for a continuation of the successful career of the GAZETTE.

Mr. C. R. Byrom, O.B.E., Chief Operating Manager, London Midland & Scottish Railway.

On the occasion of the centenary of THE RAILWAY GAZETTE it gives me much pleasure to send you hearty congratulations. The journal, which is appreciative of progress, serves a very useful purpose in the dissemination of information by its comprehensive survey of up-to-date railway matters generally. Its articles are a dependable guide to subjects of great interest to all connected with railways.

Mr. E. C. Cox, C.B.E., M.V.O., T.D., Traffic Manager, Southern Railway.

It will be very gratifying to you that THE RAILWAY GAZETTE, with its incorporated journals, has completed a century of useful work in the interests of transport.

I should like to congratulate you on this achievement, for it furnishes a record of the progress of the science during a period when transport has seen phenomenal changes and has established itself as a vital part of the daily life of the world.

I hope its future may be attended with great success.

Mr. A. Maynard, Chief Goods Manager, Great Western Railway.

I note that THE RAILWAY GAZETTE shares with my company the honour of reaching, in 1935, its 100th birthday. In many cases great age does not connote great improvement or great virility, but as a regular reader of your paper for very many years I must say that in its case it has kept abreast of the times, so that to-day it is more than ever an invaluable mirror of transport activities throughout the world.

It provides, in a very attractive and concise form, a method of keeping in touch with practically every interesting development in the transport industry. These developments, for varying reasons, are coming into being in such numbers that it is a little difficult to conceive how they could be followed promptly were it not for THE RAILWAY GAZETTE, and I, for one, should like to thank you for placing at my disposal such a ready means of keeping in contact with all that matters in the sphere of transport.

I trust your present high standard will be maintained and that prosperity will follow your paper into its second century.

Mr. Ashton Davies, O.B.E., Chief Commercial Manager, London Midland & Scottish Railway.

The centenary of THE RAILWAY GAZETTE and its incorporated journals is a noteworthy event not only in the world of railways, but in that of technical journalism as well. To my mind it may be said today, both of the railways and of this important journal which reflects their progress and their problems, not that they are 100 years old, but rather that they are 100 years young.

THE RAILWAY GAZETTE is something more than a week-to-week chronicle of other people's achievements. It is a fearless critic and a constructive force, and in no single phase of railway activities is its policy more far-sighted than in its recognition and treatment of commercial tendencies as applied to a railway undertaking. While we shall not be here to see it, I hope that when it celebrates its bi-centenary THE RAILWAY GAZETTE will occupy as unique and as distinguished a position as it does today.

Mr. H. L. Wilkinson, Superintendent of the Line, Great Western Railway.

I am most interested to learn of the centenary of THE RAILWAY GAZETTE, and would like to take this opportunity of offering you my heartiest congratulations on your 100 years of continuous publication. All railway officers look forward to your weekly review of railway developments, and acquire much useful knowledge in regard to what is taking place in this country and abroad. With best wishes for the future.

Mr. F. A. Pope, General Assistant, Chief Operating Manager's Office, London Midland & Scottish Railway.

I see from this week's number of THE RAILWAY GAZETTE that you are celebrating the centenary of THE RAILWAY GAZETTE and its incorporated journals. I hasten to be among the very large company who will be writing to congratulate you on such an event. I know of no railway publication in any other country which is better produced, has more interesting matter, or is more widely read by all grades of all departments than THE RAILWAY GAZETTE. Its value as a means of broadcasting good ideas and interesting developments is unquestioned. The personal touch which you and your staff maintain with railway officers all over the world is a particular and pleasant feature. In common with all your readers, I sincerely wish you and the staff of THE RAILWAY GAZETTE continued success.

Mr. W. Crozier, Operating Manager, Scotland, London Midland & Scottish Railway.

Ever since my advent to railway service I have been familiar with THE RAILWAY GAZETTE, and have looked forward weekly to the receipt of this interesting journal not only for the excellence of its leading articles on current topics of interest to railwaymen, but for its advanced views on railway practice both at home and abroad.

There must be few technical journals which have survived for 100 years, which goes to show its usefulness. The GAZETTE is read by the principal members of my own staff as well as myself each week, and it serves a very useful purpose in keeping British, Colonial and foreign railway development and practice constantly in front of one. My best wishes and congratulations to you for your continued success.

Mr. S. T. Burgoyne, Passenger Manager (North Eastern Area), London & North Eastern Railway, York.

I send my hearty congratulations to THE RAILWAY GAZETTE on scoring a century's publication of railway news. In that period of time you and your predecessors in office have made a valuable contribution to the progress of our railway system. By your work of faithful record and constructive criticism you have assisted materially in co-ordinating the efforts of railway companies to adopt a uniform standard of the best. THE RAILWAY GAZETTE ranks with the Rule Book, the Working Time Table, the Appendix and the Clearing House Arrangements as part of the stock-in-trade of every railway officer. Every good wish for the continuance of your work.

Mr. V. M. Barrington-Ward, Superintendent (Western Section, Southern Area), London & North Eastern Railway.

I wish THE RAILWAY GAZETTE and all your other publications every prosperity, and can only add that just as one makes a point of reading *The Times* daily, equally so does one make a point of reading THE RAILWAY GAZETTE weekly. In other words, I think most railwaymen look upon THE RAILWAY GAZETTE as an essential factor in their daily work.

Mr. R. Gardiner, Superintendent (Southern Scottish Area), London & North Eastern Railway.

Not only has your journal kept abreast of the new developments in the railway world which have been so prolific within the last half of the century, but the comments and criticisms published have been well informed and most fair. It has thereby earned the confidence of its readers, and I am sure has been of considerable help not alone to railwaymen, but to all users of transport.

I send you my best wishes for the continued success of THE RAILWAY GAZETTE.

Mr. Paul Gibb, Goods Manager (North Eastern Area), London & North Eastern Railway, York.

Hearty congratulations on the completion of the centenary of your paper! The existence of a continuous record of railway and transport activities over such a long period is something to be proud of, from a national as well as a railway point of view. Many of the records in *Herapath's Journal* of the early days of railway development, looked at today, are of great interest, and, moreover, have a high historical value.

The excellent literary data of the GAZETTE in the stirring times of today and of the last decade are looked upon by railwaymen as a necessary as well as an interesting part of official life. Like those of the first railway publications, these records will undoubtedly prove of immense value in the years ahead.

Mr. C. J. Selway, C.B.E., Passenger Manager (Southern Area), London & North Eastern Railway.

The centenary of THE RAILWAY GAZETTE and its incorporated journals affords an opportunity of expressing the gratitude readers must feel for the valuable help given by the weekly issues in keeping in touch with transport progress in this and other countries. Those who remember that much respected Victorian journal, the *Railway News*, must admire the manner in which the succession has been carried forward in the admirable pages of the GAZETTE, which keeps well abreast of the times and can be relied on not only for concise and accurate description of technical developments, but also for a full record of current happenings and "personal" news.

The introduction of a page in lighter vein under the heading of "The Scrap Heap" is perhaps a sign of the times, and is no doubt fully appreciated, as well as the editorial views written from an independent but well-informed standpoint which have so often given food for thought and conveyed a message of sympathy and encouragement in stressful times of war, strikes, and other untoward happenings.

It is right also to recall that the regular activities of the GAZETTE are often supplemented by the production of special numbers on matters of widespread interest such as Diesel Railway Traction, Railway Centenaries, and the development of the Indian Railway System; also the International Railway Congresses at Rome, London and Madrid, in connection with which the exhaustive—and sometimes bi-lingual—information published both before, during and after the meetings has proved of the greatest assistance and interest to English-speaking delegates and others.

Railway officers both of present and past generations must be grateful for the means THE RAILWAY GAZETTE provides of learning, with little trouble and cost, what is taking place in the great world of railways at home and abroad, and if it could be stated how often the journal is used for reference purposes where no suitable record is otherwise available, this in itself would be a cause of encouragement and strengthen the general congratulations the present occasion gives rise to.

May 10, 1935

Mr. C. M. Jenkin Jones, Superintendent (North Eastern Area), London & North Eastern Railway, York.

I write to express my congratulations to you on the occasion of the centenary of THE RAILWAY GAZETTE. In 1835 the railway system was only 10 years old, and few lines had been opened at that time. It is therefore a great tribute to the foresight of the founders of your journal that they realised the importance in those early days of issuing a publication which could be regarded as a clearing house for recording authentic railway news. Like railway companies, the original *Herapath's Railway Journal* has changed its title by amalgamation into THE RAILWAY GAZETTE, but the initial purpose has remained clear and unchanged throughout its long and useful career. Today, THE RAILWAY GAZETTE, both in the form of back numbers and current issues, is an essential part of every railway officer's furniture. The back numbers constitute a storehouse of reliable railway history, and the current issues are a valuable agency for keeping active minds in touch with modern progress. I wish THE RAILWAY GAZETTE every success during its second century.

Mr. H. H. Mauldin, Superintendent, Eastern Section (Southern Area), London & North Eastern Railway.

I understand that THE RAILWAY GAZETTE will this month have completed 100 years of continuous publication, and I would like to take this opportunity of tendering my congratulations on what is a really outstanding achievement in the technical journalistic world. Speaking as a railway traffic officer, one looks forward each week to the GAZETTE for its clear and well-written articles on current railway matters; new developments; and progress in all parts of the world. I sincerely hope that the journal will long continue in publication, and that it may have, if this is possible, an even more successful future.

Mr. Jas. G. Singer, Traffic Superintendent (Northern Scottish Area), London & North Eastern Railway, Aberdeen.

It is exceedingly interesting to learn that THE RAILWAY GAZETTE has now completed one hundred years of useful service to all interested in railways. A century "not out" is a coveted distinction in more aspects than one, and when the "Centurion" appears to be gaining strength at the commencement of another century, this augurs well for the future.

To readers of the GAZETTE who are at some distance from the industrial "Hub," the publication makes a special appeal, as they are enabled through its well-written articles to keep in close touch with current developments in the railway world, not only in this country, but all over the globe. Such information is of great value and interest to all who are in any way connected with the railways, and also to a much wider circle of readers.

Mr. A. L. Gibson, Continental Traffic Manager, London & North Eastern Railway.

Congratulations to THE RAILWAY GAZETTE (with incorporated journals) on having attained its first century: may it continue to prosper during its second hundred years! It is a remarkable journal. It never fails to tell, in the most interesting way, the story of the latest developments in the railway world. I remember with pleasure the splendid articles produced on the occasion of the building of our present Harwich-Hook of Holland steamers (*Vienna*, *Prague* and *Amsterdam*), and, more recently, those (so admirably illustrated) on the construction and opening of our new extension at Parkeston Quay, Harwich. These centenary celebrations provide a suitable opportunity for me to say "thank you." "Vive la RAILWAY GAZETTE!"

Mr. E. J. Missenden, Docks and Marine Manager, Southern Railway.

Railwaymen who serve their calling, not only in this country but also overseas, are extremely fortunate in having at their disposal such a singularly well-informed journal as THE RAILWAY GAZETTE.

At no time in the history of railways has there been a more intense desire on the part of railwaymen to keep abreast of the times, and so provide an efficient and safe service, and

I know of no better way of achieving this result than by making a close study, week by week, of this excellent journal in order that one may read the latest information in regard to what is taking place in all phases of railway practice throughout the world.

Mr. C. S. Page, Chief Docks Manager, Great Western Railway.

I have very much pleasure in testifying to the usefulness and help of THE RAILWAY GAZETTE. A century of service in publishing news, and generally upholding the status of the railways of the world, is a record that may well be the subject of special celebration. The present Editor and his Staff are worthily carrying on the tradition of accuracy, dignity and interest in conveying to the public not merely items of news relating to the railways, but also the railway point of view in respect of important questions of public policy which arise from time to time. May the present standard long be continued, and may success still crown your efforts in the future, as in the past.

Mr. F. Bushrod, Superintendent of Operation, Southern Railway.

As a reader of your very excellent journal for many years, I offer you my congratulations on reaching the centenary of your allied publication. May you continue to flourish and keep us posted with transport doings in all parts of the world and, not least, maintain our interest and touch with many old friends overseas.

Mr. J. B. Elliot, Assistant Traffic Manager, Southern Railway.

I can say with truth that I look forward to receiving my copy of THE RAILWAY GAZETTE each week.

I enjoy its contents because they are accurate and up to date, and which used to be very rare among technical papers, the typographic production is excellent.

Hearty congratulations on the centenary, and although I shall not be present when the second centenary is celebrated, I trust that THE RAILWAY GAZETTE will be in even better health than today, if such a thing is possible.

Mr. R. M. T. Richards, Development Officer, Southern Railway.

I cannot let the opportunity go by of offering to you my very heartiest congratulations on THE RAILWAY GAZETTE having scored its century. It has always played a first-rate clean game, and has therefore always been a pleasure to see as the weeks roll by.

A production takes after its chief, and the high standard of THE RAILWAY GAZETTE speaks more than any words of mine of your good leadership and the loyal and energetic staff that you have round you. May we for many long years see the old familiar cover.

Mr. F. R. Potter, Principal Assistant to Superintendent of the Line, Great Western Railway.

It is with considerable pleasure that I send my congratulations to THE RAILWAY GAZETTE on the celebration of its centenary, for there is no journal that I read more consistently every week-end, and from which I have been able to obtain such authoritative information on the developments and practices, not only of the British railways, but practically the railways throughout the world.

It is significant that in your issue for April 26 you have a most interesting article on the Belgian Railways, who are celebrating their centenary, and no doubt later on in the year you will publish an equally interesting record of the development of my own company, which is also this year celebrating its centenary.

The fact that letters frequently appear in your issues from railwaymen in the Colonies and Dominions is indicative of the wide range of your publication, and on which you may justly be proud as representing an important link between the Mother Country and the British Empire in matters appertaining to "Management, Engineering and Operation" of railways. May you continue to prosper.

Mr. K. W. C. Grand, General Assistant to Superintendent of the Line, Great Western Railway.

To be able to record the growth of Transport over a century of intense progress is a matter for congratulation, more especially when the record has been consistently kept at a high standard by intelligent suggestions and helpful criticism. It must be a matter of great satisfaction to you to be the Editor at such a notable time in the history of THE RAILWAY GAZETTE.

Mr. G. E. Orton, Commercial Assistant to the Superintendent of the Line, Great Western Railway.

I should like to add my congratulations to the many you will receive on the occasion of the centenary of THE RAILWAY GAZETTE and incorporated journals. To all railway officers the GAZETTE, in particular, is as familiar as the timetable, and has become just as much a part of our railway life.

Mr. G. H. Loftus Allen, Advertising and Publicity Officer, London Midland & Scottish Railway.

It is with the greatest pleasure that I add my congratulations to the hundreds of others the Editor must have received on the occasion of THE RAILWAY GAZETTE—the paper almost as old as railways themselves—completing 100 years of continuous publication.

Throughout this period of time THE RAILWAY GAZETTE has done yeoman service for the cause of railways. It is known and read the world over, and is accepted everywhere as a paper whose news and views on railways and allied subjects are treated with the utmost respect. In expressing appreciation of past achievement, I add the wish that THE RAILWAY GAZETTE's future may be equally as happy and prosperous.

Mr. C. Dandridge, Advertising Manager, London & North Eastern Railway.

Please accept my congratulations on the forthcoming centenary of THE RAILWAY GAZETTE and its associated journals. Your paper week by week epitomises and otherwise records everything of importance in the railway world at home and abroad, thus forming an invaluable "guide, philosopher and friend" to every railway officer and many others who take a close interest in our operations.

I couple with these congratulations my best wishes for the continued prosperity of THE RAILWAY GAZETTE and all those associated with its production and circulation.

Mr. J. Dewar, Publicity Officer, Great Western Railway.

I note that, on May 1, 1835, Herapath's Railway Journal was published for the first time, so that THE RAILWAY GAZETTE, in its guise as literary phoenix, celebrates, together with its incorporated journals, a first centenary birthday on May 3, 1935. The invaluable services performed by these publications throughout 100 years will be the subject of grateful tribute from all who are eminent in railway life and interests the world over, and they need no emphasis from me. Yet I would venture to add, from the angle of Great Western publicity, my high appreciation of the help and instruction which I personally derive from each succeeding number of THE RAILWAY GAZETTE. As one centenarian to another, I offer you my heartiest congratulations on a memorable anniversary.

Mr. E. Rawdon Smith, Public Relations Officer, London Passenger Transport Board.

Centenaries are occasions not only for sincere congratulations from outside but also for a strict stock-taking from within. It must be a source of contentment to the Editor and the staff of THE RAILWAY GAZETTE that the position which their paper holds has been so consolidated by good work as to reduce to a minimum the possibility of justifiable self-criticism. We, who have learned that to read an article or to see a photograph in THE RAILWAY GAZETTE is to enjoy an efficient and a palatable production, can only hope that our small word of ardent appreciation, particularly for the fair-mindedness of your journal, may not be lost in the paean of well-merited praise which you must be receiving at this time.

Mr. C. Grasemann, Public Relations and Advertising Officer, Southern Railway.

Many congratulations on your centenary. I hope that THE RAILWAY GAZETTE will continue to carry on its fine reputation of impartial fairmindedness and accuracy. While its weekly news keeps us up to date, the bound volumes form a permanent encyclopædia of railway knowledge throughout the world. As Publicity Officer of the Southern Railway I am privileged to experience the unfailing courtesy of the management and staff of the paper.

Mr. J. R. Hind, British Railways Press Agent.

There is a priceless heritage in the pages of THE RAILWAY GAZETTE and the journals incorporated with it. One hundred years of data and information are here available, recorded with a care and diligence which makes THE RAILWAY GAZETTE a paramount source of inspiration to all.

We are proud to possess the world's best railways, the world's safest form of transport, the world's largest group of docks and hotels, the world's fastest regular steam train, the world's longest non-stop runs, the world's largest electric suburban train service, and the world's Premier Weekly trade and technical journal—THE RAILWAY GAZETTE.

Mr. A. P. Ross, Chief Stores Superintendent, London & North Eastern Railway.

I was interested to learn that on May 3 THE RAILWAY GAZETTE and its associated journals celebrated its centenary, and I should like to offer you my congratulations on thus having completed 100 years of continuous publication. THE RAILWAY GAZETTE is, I think, unique in the world of railway literature, and it is, I know, read every week with considerable interest, not only by railwaymen in all parts of the world, but also by engineers and representatives of those countless trades associated with the railway industry. Its articles, covering all phases of railway activities, and its authoritative news columns are appreciated by all concerned in railway management who are kept well informed by THE RAILWAY GAZETTE of developments and events in the railway world. I send my best wishes to you and THE RAILWAY GAZETTE on entering its 101st year.

Mr. P. J. Floyd, Traffic Manager, Great Southern Railway, Dublin.

I am very pleased to learn that THE RAILWAY GAZETTE has completed 100 years of continuous publication, and I would like to add my congratulations to the many I am sure you will receive on the occasion of your centenary.

I have noted the interesting progress of the GAZETTE for some years past, and feel sure that the service given in keeping railwaymen the world over in touch with current railway developments is of great assistance to them in dealing with the problems with which they are faced from time to time. A proof of this is evidenced by the enquiries I have had concerning further details of arrangements adopted by this company.

Sir John A. F. Aspinall, formerly General Manager, Lancashire & Yorkshire Railway.

Out of the 100 years which you claim for the existence of the various railway journals (now incorporated with THE RAILWAY GAZETTE) I have existed for 84, and about three-quarters of that time my close connection with the mechanical engineering and management sides of the railways enables me to pass in review the very numerous and advantageous changes, many of which were of national importance, which have affected railway operation and which it is so desirable to have carefully recorded.

The continuous publication of all-important railway events at home and many abroad has been of great advantage not only to myself and other railwaymen, but to the public as well, and has enabled the latter to appreciate the progress which is constantly being made.

It is a pleasant thing to have these records set out in such an attractive form as we find in THE RAILWAY GAZETTE.

May 10, 1935

Mr. F. C. A. Coventry, Superintendent of Road Transport, Great Western Railway.

I am much interested to hear that THE RAILWAY GAZETTE reaches its centenary in this year of notable anniversaries. I have personally studied my weekly copy of the paper for many years, and have always found it useful and instructive, whether my interests were concerned with engineering, traffic or road transport matters. May your journal long continue its invaluable work in placing before the public in general, and railwaymen in particular, the activities of the railways throughout the world.

Mr. J. Shearman, Road Motor Engineer, London Midland & Scottish Railway.

I am very interested indeed to hear that THE RAILWAY GAZETTE and its incorporated journals completed 100 years of continuous publication on May 3.

In offering you my congratulations on this centenary, I should like to say how much I enjoy reading THE RAILWAY GAZETTE, and admire its get-up, particularly the way in which the illustrations are reproduced.

Your Road Transport Section in particular I find most interesting and useful, and I look upon this as evidence of the ability of your paper to adapt itself to changing circumstances and to keep abreast of the times.

Mr. J. Calder, formerly General Manager, Scotland, London & North Eastern Railway.

THE RAILWAY GAZETTE and the journals now incorporated therewith having completed 100 years of continuous publication, I desire to offer you my congratulations on the attainment of the centenary of these journals, which during my railway life I found indispensable in keeping me in touch with railway matters in this and other countries. And shall I add that since my retirement from active service I find THE RAILWAY GAZETTE exercises as great a charm as ever, inasmuch as through this medium I feel I am still a railwayman. I wish you every success in the years to come.

Mr. J. H. Follows, C.V.O., C.B.E., J.P., formerly Vice-President, London Midland & Scottish Railway.

THE RAILWAY GAZETTE performed an important and helpful part in my railway life. On occasions when it was necessary to give publicity to changes in methods, the Editor and staff were most helpful and had the faculty and ability to express the matter in understandable language. In other countries which I have had the privilege to visit, I found the publication not only provided an avenue for exchange of information and methods, but what was perhaps even more important, provided facilities whereby the staff are kept in communication with each other. All good wishes.

Mr. R. H. Nicholls, C.B.E., late Superintendent of the Great Western Railway.

Would you please allow me to take the very great pleasure of offering you my most sincere congratulations on the centenary, on May 3, of THE RAILWAY GAZETTE and the journals incorporated with it. As I think you know, I have always been a great admirer of the efficient, capable and exceedingly interesting manner in which the journal is managed and produced. I consider that great credit is due to all concerned. In my view it can be said, without any fear of contradiction, that THE RAILWAY GAZETTE has performed, and is performing, a very great service to everyone interested in railways, both at home and overseas, and that, so to speak, it just puts the engine on the train.

As a retired railwayman, one of my greatest delights of the week is the looking forward to the receipt, on Fridays, of my copy of the journal, of "pulling back the tag," and of consuming the large and wonderful helping of all sorts and kinds of general widespread and most interesting information. In my opinion, any railwayman—whether on the active or retired list—who does not have the privilege of reading THE RAILWAY GAZETTE misses a great deal of exceedingly good and most attractive fare, particularly well served up.

May I once again wish you continuation of your thoroughly well-deserved success, and may I also express the hope that the future success of THE RAILWAY GAZETTE will be even greater than ever.

Mr. C. H. Stemp, C.B.E., formerly Superintendent (Southern Scottish Area), L.N.E.R., Edinburgh.

For many years I have looked forward each week to reading my RAILWAY GAZETTE without which no railway officer could keep himself up to date. Its clear and concise articles cover every phase of railway operation at home and abroad, enabling the British railway officer to know how his confrères in other countries tackle the problems which are common to all.

Although I am no longer in active service, I shall still continue to peruse THE RAILWAY GAZETTE to follow the developments in railway invention and operation, and to read of the careers of my former colleagues.

Mr. A. E. Tedder, Late Continental Traffic Manager's Dept., London & North Eastern Railway.

I was particularly interested in the current issue of your journal and congratulate you warmly on its celebrating its centenary. A comparison between the earlier editions and the present up-to-date paper is illuminating. I find, too, the article on the new Leicester Square station of quite absorbing interest.

Mr. J. Williams, formerly Joint Superintendent, L.M.S. and G.W. Railways, Shrewsbury.

THE RAILWAY GAZETTE is a journal which has always interested me. It is not every journal that has succeeded so well. I offer my congratulations, accompanied by best wishes for future prosperity.

Mr. G. H. Griffith, General Manager, The Pullman Car Co. Ltd., London.

As a regular reader of THE RAILWAY GAZETTE for many years past I should like to send you my heartiest congratulations on the completion of 100 years of continuous publication of THE RAILWAY GAZETTE and the journals incorporated with it. When I was abroad I found the GAZETTE most helpful in my work, as its excellent articles and descriptions enabled one to keep up to date with the development and improvements taking place on railways in Great Britain and other parts of the world.

I hope THE RAILWAY GAZETTE will long continue its useful and successful career.

M. Bachellery, Chef du service du matériel et de la traction, Chemins de fer de Paris à Orléans-Midi, Paris.

Nous félicitons avec plaisir la RAILWAY GAZETTE à l'occasion de la célébration de son centenaire. Elle tient au courant les techniciens du monde entier de tous les événements qui intéressent les Chemins de fer. Grâce à son organisation et à ses moyens d'information, cette revue a toujours été l'une des premières à signaler les progrès accomplis sur les réseaux de tous les pays du monde et ce précieux avantage en fait l'une des publications les plus lues et les plus recherchées des Ingénieurs de Chemins de fer.

A notre avis, les études qui nous paraissent les plus dignes d'intéresser les Ingénieurs des Réseaux sont celles qui ont trait au rendement des Chemins de fer ; c'est-à-dire à leur efficience. A ce titre, ce sont donc la valeur des principes sur lesquels sont établies les locomotives et le matériel roulant, la bonne organisation des ateliers qui les construisent, les réparent et les méthodes d'exploitation qui permettent de tirer de ce matériel le meilleur parti, qui nous paraissent devoir intéresser en premier lieu les lecteurs de la RAILWAY GAZETTE.

[We tender our warmest congratulations to THE RAILWAY GAZETTE on the occasion of its centenary. It keeps railwaymen the world over in touch with events of railway interest, and thanks to its organisation and progressive policy, the journal has always been one of the first to announce developments on the railway systems of all countries. This valuable feature makes it one of the most widely read and sought-after periodicals known to railway engineers.

In our opinion the features which appeal most are those dealing with the service of railways : that is to say, with their efficiency. For this reason we consider descriptions of the principles on which locomotives and rolling stock are based ; the proper organisation of the workshops which build and repair them ; and the working methods which ensure the best use being made of the material, are of primary interest to your readers.]

Herr Hans Etter, General Manager (Working and Construction), Swiss Federal Railways.

We possess a file of THE RAILWAY GAZETTE from the year 1924. It always evokes very great interest with our circle of readers who are drawn for the most part from the higher officials of our technical service, for your journal always deals particularly and informatively with the more important innovations in the railways themselves, and with the perfecting of the transport of passengers and goods by means of motor buses and motor lorries in England. In addition to all the always valuable and very interesting matter contained in your RAILWAY GAZETTE, we appreciate specially the typical illustration and the careful editing. In our opinion its whole make-up places it in the front rank as one of the very best and most serviceable of the technical journals published today. It gives us pleasure to be able unconditionally to express to you our praise. It shows you how highly we appreciate your journal. We find in it, in a practical form, the most valuable treatises dealing with innovations in railway requirements, in the construction of railways (lines, bridges, laying of rails, upkeep, &c.), and further articles in the section on the Capital of Railways and Road Transport.

We take advantage of this opportunity to offer our congratulations on the attainment of its centenary by your splendid and world-renowned journal, to express our best wishes for its success and to assure you of our esteem.

M. Bloch, l'Ingénieur-en-Chef des Services du Matériel et des Ateliers, Chemins de fer de Paris à Orléans-Midi, Paris.

C'est avec plaisir que je renouvelle l'appréciation que j'ai eu l'occasion de vous exprimer verbalement plusieurs fois, à vous-même et à vos collaborateurs.

Votre revue est de celles qui savent le mieux se tenir au courant de tous les progrès réalisés dans le monde entier en matière de chemins de fer.

Elle possède l'art de les faire connaître d'une manière extrêmement vivante à ses lecteurs et sait toujours attirer leur attention sur les points les plus saillants des nouveaux dispositifs dont elle rend compte.

[It is with pleasure that I reiterate the appreciation that I have several times expressed verbally to you and your collaborators.

Your review is among those that keep abreast of progress achieved all over the world in railway affairs. It possesses the art of setting things out in a very vivid manner for its readers, and knows how to draw their attention to the salient features of new inventions when describing them.]

M. R. Boutteville, Paris.

Tres ancien lecteur de votre revue, dont je vois le progrès depuis un quart de siècle, je vous adresse, à l'occasion du centenaire de sa publication, mes très cordiales félicitations. C'est avec un plaisir toujours égal que j'ai abordé la lecture chaque semaine et que j'applaudis aux efforts que vous déployez pour en faire un organ vivant, largement ouvert aux idées nouvelles et aux progrès techniques qui se font jour dans le domaine ferroviaire, aussi bien dans l'Empire Britannique que dans tous les autres pays.

[As a very old reader of your review, whose progress I have watched for a quarter of a century, I send you my most cordial felicitations on your centenary. I read the journal with unfailing pleasure each week, and admire your efforts to make it a living organ, always open to new ideas, and containing technical articles which throw light on railway matters in the British Empire and in all other countries.]

M. Lancrenon, Ingénieur-en-Chef, Compagnie du Chemin de fer du Nord, Paris.

C'est avec grand plaisir que je m'associe à tous ceux qui célèbrent le centième anniversaire de votre revue. Aussi intéressants pour le grand public que pour le technicien, elle est toujours attrayante à lire et utile à consulter.

[It is with much pleasure that I associate myself with all those who celebrate the 100th anniversary of your journal. As interesting for the general public as for the technical man, it is always attractive to read and useful to consult.]

La Compagnie Générale de Construction, Saint Denis.

Nous sommes heureux de vous informer qu'en ce qui concerne, par exemple, les véhicules à traction par moteur Diesel, nous avons trouvé dans votre revue des renseignements très intéressants et que, d'autre part, les indications que vous avez publiées d'après les notes que nous vous avons fait parvenir, ont été très appréciées. En ce qui concerne la forme de votre publication, nous vous dirons également que nous n'y souhaitons aucun changement, estimant que la présentation actuelle est très heureuse.

[We are happy to inform you, so far as motor traction vehicles, for example, are concerned, that we have found most interesting information in your journal. Moreover, the information you have published, based on notes that we have sent you, has been very much appreciated. So far as the make-up of your publication is concerned, we would equally say that we do not wish for any change, considering that the present one is very pleasing.]

M. E. Pellarin, Ingénieur-en-Chef de l'Exploitation, Chemins de fer de l'Est, Paris.

Nous sommes particulièrement heureux de vous envoyer, à l'occasion du centenaire de la RAILWAY GAZETTE, nos plus vives félicitations et nos souhaits de prospérité pour votre revue.

Les caractéristiques de cette revue qui nous paraissent les plus intéressantes et les plus utiles sont les articles figurant au milieu de chaque livraison et qui tiennent le lecteur au courant des progrès techniques réalisés par les chemins de fer du monde entier. Nous apprécions également de façon toute particulière les numéros spéciaux consacrés à la traction électrique et à la traction par moteur Diesel, persuadés que nous sommes de l'importance que ces deux modes de traction sont appelés à prendre dans l'avenir.

[We are particularly pleased to send you, on the occasion of the centenary of THE RAILWAY GAZETTE, our warmest felicitations and best wishes for the future prosperity of your journal.

The features of this review which seem to us the most interesting and useful are the articles appearing in the centre of each issue, which keep the reader in touch with technical progress achieved on the railway systems of the world. We appreciate very particularly the Diesel and Electric Traction Supplements, convinced as we are of the important part that these two modes of traction are called upon to play in the future.]

M. Nasse, Chef du Service du Matériel et de la Traction, Chemins de fer de l'Etat, Paris.

J'ai l'honneur de vous adresser mes biens chaleureuses félicitations à l'occasion du prochain centenaire de votre journal.

C'est toujours avec un vif intérêt que mes collaborateurs et moi-même avons consulté vos publications, dont nous avons pu apprécier la parfaite tenue.

Il ne m'est pas possible de vous indiquer les sujets qui ont plus spécialement attiré notre attention, car, que ce soit pour les locomotives à vapeur, les automotrices à moteurs à explosion, le matériel roulant, ou l'outillage spécial, nous avons toujours trouvé des articles très documentés et d'une présentation particulièrement claire.

Je ne puis que vous souhaiter de continuer encore longuement dans cette voie pour le plus grand bien de vos lecteurs.

[I have pleasure in sending you my warmest congratulations on the occasion of the approaching centenary of your journal. My collaborators and I consult your publications with the keenest interest, and we much appreciate their splendid production.

It is impossible for me to say which subjects appeal to us the most, for, whether it be about steam locomotives, diesel railcars, rolling stock, or machine tools, we have always found most informative articles on them, presented in a particularly clear manner.

May I express the wish that you will long continue in like manner, to the greatest benefit of your readers.]

M. le Besnerais, le Directeur de l'Exploitation du Chemin de fer du Nord, Paris.

C'est chaque semaine avec le même intérêt que je prends connaissance du numéro de la RAILWAY GAZETTE qui me renseigne en quelques minutes sur toutes les nouveautés intéressantes les Chemins de fer du monde entier.

La richesse de sa documentation et la qualité de sa présentation font de votre Revue un document indispensable à tous ceux que passionne l'industrie des Chemins de fer et qu'on fera en son avenir.

[Each week I read with interest THE RAILWAY GAZETTE, from which I glean in a few minutes information on all innovations of railway interest the world over.

Its comprehensive contents and the quality of its presentation make your journal indispensable to all those interested in the railway industry and who believe in its future.]

Albion Motors Limited, Scotstoun, Glasgow.

We are interested to note that THE RAILWAY GAZETTE will next month complete 100 years of continuous publication.

We congratulate you upon your record and on the high standard which you are maintaining. As far as the message for publication is concerned, we feel that the extensive use of road transport by the railways covers such a small proportion of the 100 years of your publication that our statement could not have the necessary authority to make it of value. At the same time, may we assure you of our most cordial good wishes for your continuous success.

George Angus & Co. Ltd., Newcastle-on-Tyne.

We offer our congratulations to THE RAILWAY GAZETTE on attaining its centenary.

As advertisers in this publication, we would like to express our satisfaction at the very useful contact it maintains between the railways and their suppliers, both at home and overseas, together with the wish that it may long continue to carry out this very important service.

Mr. A. J. Boyd, Managing Director, Metropolitan-Cammell Carriage & Wagon Co. Ltd.

As subscribers for many years, we offer to THE RAILWAY GAZETTE congratulations on its centenary and good wishes for its continued success. We have always found the journal to be a reliable source of information with regard to new developments and a useful medium for keeping in touch with what is going on on different railways all over the world. The articles in THE RAILWAY GAZETTE are always reliable and well written.

Baldwins Limited, London, E.C.4.

We beg to convey to you our congratulations upon your centenary and take the opportunity of referring also to the fact that our company, like yourselves, has during a period of over 100 years followed closely the changes in the means of transport with careful development and improvement of our manufactures, so as to ensure satisfaction in the many uses to which they are now put. These include, of course, panel plates for the construction of rolling stock, wherein high finish, longevity and safety are of paramount importance.

Mr. J. E. Spear, Sales Department, British Timken Limited, Birmingham.

On the occasion of the centenary of THE RAILWAY GAZETTE we have great pleasure in sending you our best wishes for its future success and prosperity.

The recent amalgamation with *The Railway Engineer* has greatly increased the scope and value of THE RAILWAY GAZETTE, and in our opinion enhanced its usefulness to all engineers connected with the railway industry. Your ready championship of the new development in the railway industry has always been of great interest to us, and with the awakening of a new spirit of enterprise in the railways throughout the world, your assistance in this work is already bearing fruit.

We find the features of THE RAILWAY GAZETTE which are most useful to us are those dealing with developments at home and abroad, the contract section, and descriptions of new locomotives and rolling stock.

Colvilles Limited, Glasgow.

The centenary of the publication of THE RAILWAY GAZETTE and the journals included therein is indeed an occasion for celebration. The railway industry is fortunate in having a journal of the high standard of THE RAILWAY GAZETTE to serve its interests, and we extend to you on this occasion our best wishes for the future.

Mr. J. E. Calverley, Chief Engineer and Manager, Traction Department, The English Electric Co. Ltd.

I congratulate you on having completed 100 years of continuous publication. Your journal has merited and received the support, not only of manufacturers and suppliers, but of all those in any way interested in the field of railway transport and its associated problems. Your enterprise and energy in producing two supplements to your journal, dealing with diesel and electric traction respectively, are much appreciated, and will aid greatly in bringing before the authorities the merits of those forms of railway transport.

Mr. Joseph E. Beckett, Beckett, Laycock & Watkinson Limited, London, N.W.10.

There is no doubt in my mind that for real railway news THE RAILWAY GAZETTE is pre-eminent, and as a matter of fact it is one of the few trade papers I take home with me to read.

I should like to offer you our sincerest congratulations upon your 100 years of continuous publication, coming as it does at a time when transport is so much in the minds of everybody.

Schweizerische Wagons- & Aufzugsfabrik A.G., Zurich.

We congratulate in the name of many readers the Centenarian for its long life and renewed vigour. We must be thankful in these days for a periodical that does not limit its activities to the recording of the experience of one country, but publishes the new ideas and the latest developments of the whole world-wide field of railway transportation.

Cravens Railway Carriage & Wagon Co. Ltd.

In offering you our congratulations on the occasion of your centenary celebration, we, as one of the oldest established firms in the railway rolling stock industry (our connection with the trade dating back to 1867), wish to place on record our appreciation of your publication as a means of keeping in touch with all matters relative to home and foreign railways, the descriptive articles dealing with the latest type of rolling stock and methods of production being most informative and highly valued by our staff.

You are also fully aware of the high opinion we have of your paper as an advertising medium.

Craven Bros. (Manchester) Ltd., Reddish.

As manufacturers of railway workshop machine tools and equipment over a period of some 80 years, we naturally have a lively interest in all matters appertaining to this side of the machine-tool industry.

We have been regular subscribers to THE RAILWAY GAZETTE and *The Railway Engineer* (now incorporated in THE RAILWAY GAZETTE) for 27 years, and these journals have served as an invaluable source of information regarding railway developments of all kinds over a long period.

We can say quite honestly that we particularly regard THE RAILWAY GAZETTE as a work of reference on such matters as machine-tool equipment in railway workshops, and it gives us the greatest possible pleasure to tender our heartiest congratulations to you on the completion of 100 years of continuous publication. We wish your journal the continued success it deserves.

Prior to its incorporation in THE RAILWAY GAZETTE, *The Railway Engineer* devoted a good deal of its space to more detailed descriptions of machine tools, which naturally were of considerable interest to us, and for some time we were apprehensive lest its incorporation with THE RAILWAY GAZETTE would lead to a discontinuation of publication of such features. We are pleased to note, however, that this is not the case, and we hope that you will give the greatest prominence possible to machine-tool matters in the pages of your journal in future, as machine tools must undoubtedly be regarded as the first line of progress in all railway matters.

The Consolidated Brake & Engineering Co. Ltd., Slough.

In congratulating THE RAILWAY GAZETTE in the attainment of a centenary of continuous publication, which coincides very closely with that of the Railway Centenary, we would like to record our appreciation of the useful assistance your publication has proved to us for well over a quarter of a century.

Above all, the value of the news drawn from all quarters of the earth, so essential to those engaged in the business of the world's railways.

The Glacier Metal Co. Ltd., London.

It is of great interest to learn that this year marks the 100th anniversary of your publication. We think you are deserving of hearty congratulations on the position you have established for yourselves during this period amongst the technical journals of this country.

We are particularly interested in the application of high-speed diesel engines, not only to road transport vehicles, but also to railway locomotives. We believe that the economy and reliability of this type of unit is bound to find it a larger place in the railway world than it at present holds, and we have installed plant for the production of the type of crank-shaft bearing which these engines are at present using and look forward to the future with some confidence.

It is our belief that just as the motor car trade of this country has shown the world what a small, efficient high-speed petrol engine can accomplish, so the diesel engine industry appears to be embarking on a demonstration of similar principles with regard to the compression ignition engine. We, therefore, are undertaking extensive research with a view to the development of materials and methods of manufacture for the production of bearings to withstand the high speeds and pressures which will inevitably be the outcome of such a line of development.

Mr. W. H. Grieve, Managing Director, Lightalloys Limited, London.

As regular subscribers to and advertisers in THE RAILWAY GAZETTE we would like to convey to you our heartiest congratulations on the attainment of your centenary. We have invariably found that THE RAILWAY GAZETTE is very up-to-date in its information, both of a technical and general nature, and that it is presented in a manner which is both informative and interesting. With the continuance of this policy we feel certain that the future success of the GAZETTE is assured.

Mr. R. Gaudin, Director, Graphite Products Limited, London.

Just as a child in growing develops personality, so do many creations of man gain esteem and veneration in his eyes with the passage of years. THE RAILWAY GAZETTE, which holds in its pages the history of one of the most epoch-making contributions to "the art of directing the great sources of power in Nature for the use and convenience of man," must come within this category, and I therefore heartily congratulate you on the centenary number of this journal.

Both as a reader and advertiser, I feel that the value of the journal lies not only in its own large circulation throughout the world, but in the fact that its "personality" is sufficient to make each copy cherished, and not just looked over and cast away. If it is not on my desk on Saturday morning, I feel I have missed something.

In conclusion, I would like to congratulate you not only on the excellent letterpress and illustrations which keep one fully informed of all railway matters, but also on your pioneering in another direction, which realises that railways and relative physical means of transportation are not the only factors in distribution. I refer to the consistently sane comments you make on the consequences of the present financial system, in that it fails to solve the problem of distribution which railways, in the physical sense, have done for years past. I know of no other technical journal that draws attention to this matter in the way you do.

Wishing you every success in the future as in the past.

Mr. Horace R. Hockley, Sales Manager, The Manganese Bronze & Brass Co. Ltd., Ipswich.

Heartiest congratulations on the celebration of the centenary of THE RAILWAY GAZETTE. Everyone interested in railway work—whether still actively engaged in it or not—will join in wishing your journal at least as great a success during the next century's publication.

Mr. W. S. Edwards, W. G. Bagnall Limited, Stafford.

The writer makes a point of taking home THE RAILWAY GAZETTE at week-ends, and for the reason that it is all interesting from cover to cover it is most difficult to pick out a feature that is the more interesting.

The writer certainly thinks that now the paper has incorporated *The Railway Engineer*, although the loss of this journal is to be regretted as the loss of a very old friend and the source of most valuable information, it will enhance the value of THE RAILWAY GAZETTE enormously if the articles and tone of THE RAILWAY GAZETTE is followed in the combined publication.

Some people, of course, may look on it with a commercial side, but if there is one section more than another which appeals to the writer, it is the articles of an engineering technical nature.

General Railway Signal Co. Ltd., London.

We are delighted to congratulate you on having completed 100 years of continuous publication.

It is most difficult to state which features of the paper are most interesting as, with a publication of this description, one usually peruses the whole of its contents, since, with us, all matters on railway subjects are of interest.

Gleniffer Engines Limited, Anniesland.

We feel that the railway industry is very fortunate in having a publication of this description, devoted entirely to railway matters, and we wish THE RAILWAY GAZETTE continued success in the future.

So far as outstanding features are concerned, we consider naturally, as high-speed diesel-engine manufacturers, that the Diesel Traction Supplement is, from our point of view, the most interesting feature in the publication, and certainly is going a long way towards assisting the development of the high-speed diesel engine for railway work.

Alfred Herbert Limited, Coventry.

Hearty congratulations to THE RAILWAY GAZETTE on the completion of 100 years of continuous publication, a record of which any journal might be proud.

THE RAILWAY GAZETTE, dealing with management, engineering, and operation, is carrying valuable information to railwaymen all over the world, and is worthily maintaining the high prestige enjoyed by the British technical press.

Mr. B. Irving, Managing Director, Sir W. G. Armstrong Whitworth & Co. (Engineers) Ltd., Newcastle-upon-Tyne.

A century of continuous publication is something of which any paper may justly feel proud, and we offer our hearty congratulations on the celebration of your centenary.

When your journalistic forebears, now incorporated in the GAZETTE, first appeared in print, railways were in their infancy, and those responsible for the origination of those papers must have had an instinct for an enduring supply of good news at a time when specialised journalism was not the force it was destined to become. They sensed the importance of this new means of transport to the rapidly expanding industrialism of the day, and decided, rightly, that railway journalism had a contribution to make to that development. They must have been men of courage and of insight, so they carried on, growing up with the railway, and your conjoint pages form an intensely interesting record of railway development and operation from the earliest time to the present day—a record which of late years has fittingly expanded to include transport matters in a wider sense.

It was, and is, a work well worth doing, and worth doing well, and we think that you, and your readers alike, have reason to feel satisfied with the way in which you have discharged your obligations, and we wish you continued success as you enter upon your second century.

May 10, 1935

John Holroyd & Co. Ltd., Milnrow.

We wish to congratulate you on the completion of 100 years' continuous publication. We are always very much interested in your journal, a copy of which is circulated to our various departments every week, and wish it every success in the future. The feature in the paper which interests us most as makers of machine tools is the articles on new plant and equipment in railway workshops.

Imperial Chemical Industries Limited, London, S.W.1.

This is indeed a notable year for anniversaries, including as it does the Jubilee of the reign of King George V, and the 250th anniversaries of Bach and Handel, as well as of the formation of eight cavalry and nine infantry regiments of our regular army. It is in a sense fitting that the centenary of THE RAILWAY GAZETTE should fall in the same year, since it is surely as well established as the reputations of those two famous musicians and 17 military units!

THE RAILWAY GAZETTE seems to combine in a unique manner an appeal both to the technical man and to the layman who is merely interested in railways. The paper has a particular interest from the point of view of Imperial Chemical Industries, the products of which are finding their way, in increasing quantities, into railway practice and maintenance. To mention but a few, sodium aluminate is finding a growing use in the softening of boiler-feed water; Rexine is, to a considerable extent, superseding older fabrics in passenger coaches; solid CO₂ or "Drikold" is being used both for the provision of insulated wagons for the carriage of perishable foodstuffs and for the shrink fitting of cylinder and steam-chest liners. It is to be hoped that more attention will shortly be paid by the railway companies to the necessity for a return to their old standards of colour, and that this realisation will bring in its train wider uses for the new synthetic lacquers and finishes which are being developed by the chemical industry.

No matter how limited or how technical the introduction of new chemical products into the railways, the fact is almost at once noted in THE RAILWAY GAZETTE—a convincing proof of the watchful and enterprising way in which the paper serves the interests of all those connected with railway transport, which despite the growth of other methods remains and must remain the backbone of the transportation system of this country.

Joseph Kaye & Sons Ltd., Leeds.

We note with interest that THE RAILWAY GAZETTE and its incorporated journals have completed 100 years of publication, and we congratulate you on the high standard which has been maintained.

As manufacturers of the well-known Kaye Automatic Wedge Lock, a type now used on all British railways, our interest has naturally been greater in those features which have been descriptive of railway carriage stock.

We have advertised in your journal for upwards of 40 years, and have no doubt benefited both in regard to railway locks and also seamless steel oilcans.

Mr. Ernest E. Lloyd, Davis & Lloyd, Westminster.

We note that THE RAILWAY GAZETTE and the journals incorporated with it have completed 100 years of continuous publication, and take the opportunity of congratulating you upon your excellent production. We think very well of THE RAILWAY GAZETTE and use it as a medium for advertising our interests.

Lamp Manufacturing & Railway Supplies Limited, London.

We congratulate THE RAILWAY GAZETTE and its incorporated journals on attaining 100 years of continuous publication. This is a noteworthy achievement and of itself establishes the value of the publication to the interests it serves.

In its latest form, incorporating *The Railway Engineer*, it has still further increased its usefulness, and we wish THE RAILWAY GAZETTE continued success.

We find it difficult to establish an order of merit for the various features of THE RAILWAY GAZETTE, most, if not all, of which contribute their share of the interest and the usefulness of the paper.

The Laycock Engineering Company, Sheffield.

May we join with other friends in wishing THE RAILWAY GAZETTE hearty congratulations on attaining its centenary.

We read every copy with new interest, and always find the information reliable and helpful in every way.

We hope that it will continue to make its valuable contribution to the railway industry, and that our followers will have the privilege and pleasure of sending further congratulations.

R. A. Lister & Co. Ltd., Dursley.

Following so closely on the centenary of the first railway, it is interesting to note that THE RAILWAY GAZETTE has completed its 100 years of publication, a record of which you may be justly proud.

We are always interested to read this journal, not only on account of the interesting matter it contains, but because of the excellent manner in which it is edited, as well as illustrated. Wishing you continued success.

Mr. H. J. S. Moyses, Managing Director, The Birmingham Railway Carriage & Wagon Co. Ltd.

I should like to offer my congratulations to THE RAILWAY GAZETTE on the attainment of its centenary. Your journal has long enjoyed a high reputation among railway engineers and officials for its circulation of matters of interest to them, and the recording in such a presentable manner of modern workshop practices and developments. I trust THE RAILWAY GAZETTE will long continue to perform such a useful service and to maintain the position which it has achieved.

Mr. W. H. Powell, Director and General Manager, The Westinghouse Brake & Saxby Signal Co. Ltd., London.

May I offer my congratulations to THE RAILWAY GAZETTE on attaining its centenary. 100 years of continuous service to all grades of railway officers and employees, as well as to the numerous engineering and other companies whose well-being is bound up with that of the railways, is indeed a record to be proud of. I am sure it will be the wish of all your readers that THE RAILWAY GAZETTE may long continue its fine record of usefulness.

G. D. Peters & Co. Ltd., Slough.

It is with very great interest that we note that THE RAILWAY GAZETTE and its incorporated journals have now completed 100 years of continuous publication.

We would like to congratulate you upon this record, and also upon the very high standard which you have maintained.

We can say quite definitely that THE RAILWAY GAZETTE has proved of great value to us, and we find every issue very interesting and helpful.

Hoping that you will be able to continue on the same lines, and wishing you every success for the future.

Serck Radiators Limited, Birmingham.

The GAZETTE may be of long standing, but it is certainly modern in thought and in up-to-date ideas.

We appreciate most the technical supplement, for in these days of so many journals, the supplement enables specialists to get the "meat" of the journal in concentrated form.

We realise this more so because being specialists in radiators for the cooling of oil and water, we are concerned with all up-to-date developments of diesel locomotives, railcars, &c.

Mr. W. Simmons, Director, Alfred Wiseman & Co. (1933) Ltd., Birmingham.

As I have seen your journal in the railway engineers' offices in all parts of the world, I know in what regard it is held, and am not surprised to learn that it has had a continuous publishing history of 100 years, because it could not have been so firmly established in the minds and reading habits of the industry in much less time.

I should not like to separate the features to find the most interesting, because they all have their places. Wishing you continued prosperity.

The Sefko Ball Bearing Co. Ltd., Luton.

We extend to you our congratulations on the attaining of your centenary.

In regard to those features of your publication which are of most interest to us, generally speaking we are only concerned with anti-friction bearing applications. Any articles, therefore, dealing with ball and roller bearings for railway plant and equipment are of special interest.

George Spencer, Moulton & Co. Ltd., Westminster, S.W.1.

On the occasion of the centenary of THE RAILWAY GAZETTE which you are now celebrating, we have pleasure in stating that we find your publication invariably of great interest. No doubt many other of your subscribers and advertisers are of the same opinion.

John I. Thornycroft & Co. Ltd., London, S.W.1.

The completion of 100 years' continuous publication of THE RAILWAY GAZETTE and the journals now incorporated with it gives us an opportunity of expressing our appreciation of the services rendered by this journal to those connected with the manufacture of railway equipment, including road motor vehicles.

With the introduction of diesel railcars and the supplement devoted to this subject which appears as a regular feature with your journal, we have noted with interest the steady progress of the diesel unit for rail traction in a similar manner to that in which compression ignition or diesel engines have been adapted successfully to road vehicles for general goods haulage, and as we are ourselves interested in this new market we naturally follow your supplement closely.

In connection with road vehicles, we have always found during our long association with THE RAILWAY GAZETTE that matters relating to transport, interesting developments, and important business secured by this company at home and overseas has been readily given prominence, thereby assisting us in making known our latest policy and productions of especial interest to railway engineers from time to time.

We look forward with confidence to a continuance of this policy, and wish THE RAILWAY GAZETTE every success in the future.

Taylor Bros. & Co. Ltd., Vickers House, Westminster.

We desire to tender to THE RAILWAY GAZETTE our congratulations on its centenary. The completion of 100 years of continuous publication proves conclusively the high esteem in which your journal is held by all who are connected and interested in railways, and we send you our good wishes for your continued success.

Mr. W. Cyril Williams, London Manager, Beyer, Peacock & Co. Ltd.

As a reader of THE RAILWAY GAZETTE for many years, first as a railwayman and latterly from the manufacturer's side, I am glad to have this opportunity of congratulating the Editor and his able staff on the maintenance of so admirably produced a production through the years.

Railways comprise an immense number of subjects, and no concern operates with more variables. It is therefore of the utmost importance that all concerned in operating railways and in the buying and selling of its equipment should study each other's practice and keep well informed, and therefore presentation of accurate information and useful comment in concise form in one journal is imperative and THE RAILWAY GAZETTE fills this rôle, and in so doing has become an indispensable publication to all railwaymen.

From my travels in many parts of the world it is noted that THE RAILWAY GAZETTE is an ever-present reference on every railway official's table, and thus in its subject matter, advertising and industrial news enables those overseas to keep up to date in these fast-moving and creative times. In its new form combining *The Railway Engineer*, a further want, to my mind, has been supplied, making possible reference in one publication to the main aspects of railway working—finance, administration, civil engineering, mechanical

engineering, and operating—thus tending towards a better understanding of each other's work and difficulties, and consequently higher efficiency.

THE RAILWAY GAZETTE is surely the world's premier railway publication—Long may it continue.

H. W. Ward & Co. Ltd., Birmingham.

We note with interest that THE RAILWAY GAZETTE and the journals now incorporated with it (including, *inter alia*, *The Railway News* and *Herapath's Railway Journal*, established in 1835) have completed the 100 years of continuous publication.

This is in itself a remarkable achievement and throws credit upon the publishers who have been responsible for a journal of this type for so many years. It also goes to prove that there has been a definite demand through this century of time for a journal of the type in question, and there is no doubt that the present publication, which combines *The Railway Engineer* and THE RAILWAY GAZETTE, is the leader in its class.

In our opinion, the features which are most interesting and useful which appear from time to time in the journal are those which concentrate upon production and those that describe the plant and methods in the various railway workshops. Wishing you every success.

D. Wickham & Co. Ltd., Ware, Herts.

We congratulate you upon the completion of 100 years' usefulness to all railwaymen and those associated with railroads.

We, at the same time, would like to refer particularly to the good service THE RAILWAY GAZETTE has done and is doing on the matter of helping the economic working of our railways. This part of your service is of interest to us as manufacturers of motor trolleys, &c., for track maintenance, and our congratulations are due to you and your paper for the very good help in persistently stressing the economy obtained from using track-maintenance machinery.

The Vulcan Foundry Limited, Newton-le-Willows.

Please accept our hearty congratulations on your centenary of THE RAILWAY GAZETTE and our best wishes for your future success and prosperity.

M. Ch. Ed. Geigy, Basle, Switzerland.

On the occasion of the 100 years' jubilee of THE RAILWAY GAZETTE, I am glad to present you my best congratulations. At the end of this year it will be 10 years since I have been regularly reading THE RAILWAY GAZETTE and *The Railway Magazine*, and the late *Railway Engineer*, and I watch every new number with the same keen interest. The particular advantage of THE RAILWAY GAZETTE, compared with other magazines, is the fact that it is not only concerned with technical features, but contains regular information about commercial and financial results of railway companies, so that one may get information, not only on the technical progress and new construction which may be of primary interest to the engineer, like myself, but also be aware of the economical results of technical improvements of rolling stock and permanent way.

It may be of interest to you to know that I often get information about Swiss Railways from THE RAILWAY GAZETTE before it is published by the Swiss technical periodicals.

Herr Alex. Friedmann, Vienna.

As a regular reader of THE RAILWAY GAZETTE I have much pleasure in congratulating you upon the centenary of your admirable paper, which has proved an invaluable source of information to all interested in railway matters, both in regard to technical progress and improvement in organisation.

Société Industrielle Suisse, Neuhausen.

We beg to inform you that we very much appreciate your journal, specially for the interesting descriptions and the very good illustrations which you publish about the newest developments in diesel motor cars; these are really very valuable. On this occasion we will not fail to congratulate you for your centenary which you are celebrating.

**La Première Fabrique de Locomotives en Pologne,
S.A., Warsaw.**

On the occasion of the centenary of your publication this year, we beg to render our congratulations and to wish you all further success in your domain.

THE RAILWAY GAZETTE has always been for us a highly-prized source of exact and reliable information which has been of invaluable use to both our executive and technical personnel. We find the items on the progress of locomotive construction, on economies obtained in their exploitation, and all information concerning tenders of the greatest interest and of actual value to us.

**The Union-Coupler Co. Ltd., c/o Dipl. Ing. L. Kortosey,
Berlin.**

On the subject of 100 years of continuous publication, we readily take this opportunity to acknowledge that your review has always given us the promptest and most satisfactory information on all questions and happenings touching the subject of railway life, both technically and economically. Wishing your review every further success.

**N.V. Nederlandsch-Indische Spoorweg-Maatschappij,
The Hague.**

We have pleasure to congratulate you on the long and successful existence of your journal, which nearly covers the whole period the railways exist. We all remember how this centenary was gloriously celebrated on occasion of the International Railway Congress, held in London in 1925.

We wish that your journal—though advancing in years—will retain its freshness of youth and that it will continue not only to show—to the persons interested—the existing conditions in railway matters, but that it will draw their attention to the interesting improvements which constantly take place in the railway world.

Modifications introduced by railway companies always have the purpose to improve the results of their enterprises. Now it is very interesting for railway managers to hear whether such modifications have fulfilled the expectations or else what the results have been. We understand that it often will be difficult to answer this question, which also means a coming back on previous publications, but we are of opinion that reliable and good information is very important and would still increase the value of your journal.

Werkspoor N.V., Amsterdam.

Although we, at the maturer age of 108 years, might at first sight be justified in adopting a somewhat protective manner when congratulating you on your first centenary, patting you on the head, so to speak, with a parental word of encouragement to carry on, we feel that this attitude would, for other reasons than that of mere age, not be either justifiable or permissible. For whereas we are nought but common makers of locomotives and railway coaches (however pleased our customers may be with them), you soar each week up to the purer air of literary art, and even on your "Scrap Heap" real gems are to be found.

We therefore would approach you on this happy day with all due deference, adding our modest congratulations to the many hundreds you will no doubt receive, and wishing you many happy returns.

Borsig Lokomotiv-Werke, G.m.b.H., Berlin-Tegel.

On the occasion of the centenary of the foundation of THE RAILWAY GAZETTE, we would like to offer you our heartiest congratulations and our best wishes for your continued prosperity in the future.

A feature which appeals to us is your unbiased recording of railway development in all parts of the world, and by reading your excellent journal we are thus able to keep abreast with everything that is happening in other countries.

The incorporation of *The Railway Engineer* in THE RAILWAY GAZETTE is, in our opinion, a step in the right direction, while we find your Supplements on Diesel Railway Traction and Electric Railway Traction useful and informative. Again offering you our congratulations and best wishes for the future.

Mr. Joseph B. Ennis, The American Locomotive Company, New York.

I offer my sincere congratulations that in May next THE RAILWAY GAZETTE and the journals now incorporated with it will have completed 100 years of continuous publication.

THE RAILWAY GAZETTE, to my mind, has been especially successful in conveying to its readers the important features of interest in connection with railway matters, not only in England and the Colonies, but also on the Continent. I anticipate with pleasure each issue, knowing that when I read it carefully I will have the up-to-date information on railway matters abroad. I wish you every success.

Michelin & Cie., Clermont-Ferrand.

Il nous est agréable de vous faire savoir que nous lisons votre revue THE RAILWAY GAZETTE avec grand intérêt, en particulier toute la documentation touchant aux autorails, leurs performances, leur utilisation, etc. . . . puisque nous nous occupons de cette branche de la construction du matériel ferroviaire.

D'autre part, nous ajoutons que tous les renseignements ayant trait aux diverses compagnies de chemins de fer, leurs exploitations en général, nous intéressent également.

Nous sommes heureux de vous présenter nos félicitations pour le long passé de votre revue qui consacre son succès, et nous formons des vœux pour que ce succès se développe encore à l'avenir.

[We have pleasure in informing you that we read your review, THE RAILWAY GAZETTE, with great interest, particularly descriptions of railcars, their performance, usefulness, &c. . . . as we are engaged in this branch of construction of railway material.

We would also add that all information dealing with various railway companies, and their general working, interests us equally.

We are glad to offer you our felicitations on the long past of your journal, which speaks of success, and we hope that this success will increase in the future.]

Herr Georg Kofler, Berlin.

I notice with great interest that THE RAILWAY GAZETTE now commemorates her centenary. I feel myself very honoured, as the constructor of the Kofler Automatic Train-Blocking System, to let you know that I consider the columns of your magazine most interesting and useful, because they give notice of the latest improvements in railway matters, and so help the railway and constructional engineers to further their work.

Wonham, Inc., New York.

It gives us great pleasure to say that we find THE RAILWAY GAZETTE of great value. It is well edited. The news contained therein is of real educational interest to us in the U.S.A. May we offer our congratulations on your having completed 100 years of continuous publication.

Mr. Karl Arnstein, Vice-President, Goodyear-Zeppelin Corporation, Akron, Ohio.

The railroads of the world have had a far-reaching effect on the economic and cultural development of the nations of the world. To serve this great industry as you have for a hundred years is no small distinction, and I send my sincere congratulations on your anniversary.

Mr. Douglas Malcolm, General Manager, American Express Company, New York.

I imagine I have made more use of THE RAILWAY GAZETTE than anyone else in the company. As near as I know, it is the only publication in the world from which you can get the latest news in regard to railroads in all countries. It is your international viewpoint which has made the publication useful to me.

You may perhaps know that the American Express represented the Great Western Railway in 1934. It was necessary for us to know the railway situation in England, and THE RAILWAY GAZETTE furnished us with the necessary data.

My impression is that your editorial staff either has a pair of very sharp scissors or a mighty fine list of correspondents.—(Correspondents.—ED. R.G.)

ECONOMIC ASPECTS OF RAILWAY SIGNALLING*

An analysis of the provisions made for the annual expenditure of some £10,500,000 on the cost of British railway signalling equipment and the payment of the staff concerned therewith

IN addressing you tonight, not from the engineering aspect of railway signalling, but from the viewpoint of the applied economist, my object will be to endeavour to place this important section of railway operation in relation to the undertaking as a whole, and to indicate the connection between the cost of signalling and the receipts from passenger and goods traffic. Expenditure is, of course, governed by income, and every penny spent on signalling, including interest, has to be met from the income of the railways. My theme, then, is to indicate the position of signalling in the railway economy.

The cost of railway signalling—which, including interest on capital, now involves the four group railway companies in an expenditure of some £10,500,000 a year—may broadly be said to be a common item. That is to say, the greater part of the cost of signalling the railway track is in respect of the whole of the traffic and provides a common service for all trains. Roughly speaking, the cost of signalling may also be said to be constant, inasmuch as the expenditure is fairly steady throughout the year, whether sales are good, bad, regular or irregular, always with the proviso, of course, that the cost is capable of reduction or cancellation, as, for example, when a passenger service on a branch line is cancelled owing to lack of support, and a less expensive method of signalling introduced to cover the remaining goods service. This reduction, however, is not automatic. A falling-off in the number of passengers on a regular service by, say, 5 per cent., will, while causing a loss of revenue, make no appreciable difference in the cost of signalling the track.

How, then, is the expenditure on railway signalling accommodated in the income derived from the general structure of railway fares and charges? No doubt you have heard a very great deal about the "standard" railway revenue; it was hoped at one time that it would become a governing factor in British railway problems. The standard revenue is an annual net revenue, and it was fixed at £50,057,847. The working expenditure for the model year was finally settled as £158,048,680. Now of that figure it was estimated that signalling maintenance would involve £1,825,000. This sum excludes the expenditure on superintendence which is now detached from this item and included under the general heading of "Superintendence" at the top of Abstract "A" in the annual accounts. The maintenance of telegraphs and telephones (£683,000) will also have to be brought in, as the dividing line between this heading and "maintenance of signalling" is in certain instances somewhat fine. It may be estimated very roughly that the amount involved in superintendence was £200,000, thus bringing the total signalling, telegraph and telephone maintenance expenditure up to £2,708,000.

Turning, next, to the Traffic Department; the expenditure on the wages of signalmen and crossing keepers in abstract "D," for the adjusted model year was £5,585,600, and to this figure needs to be added an allowance for items such as cabin heating and lighting, signal lighting and power, National Health Insurance, workmen's

compensation, uniforms, &c. The Salter Report gave a comprehensive figure of £6,500,000 as the total cost under the heading of "signalmen" for 1930, which compared with £5,198,523 published in Abstracts "D"—a difference of 25 per cent. Thus, adding 25 per cent. on to the model year figure we get £6,982,000. We are now able to ascertain roughly the total estimated working expenditure, viz.:—

		MODEL YEAR
		<i>Maintenance</i>
(1)	Superintendence	£ 200,000
	Signalling	1,825,000
(2)	Telegraphs and telephones	683,000
(1)	Allowance for workmen's compensation, N.H.I., &c.	52,000
		<i>Traffic</i>
	Wages of signalmen and crossing keepers	5,585,600
(1)	Allowance for cabin heating and lighting, N.H.I., workmen's compensation, &c.	1,396,400
		<hr/> 9,742,000

(1) Estimate.

(2) Includes block instruments, but also all telegraph and telephone apparatus.

To allow for the inclusion of non-signalling items under "Telegraph and Telephones," we may round the total off to £9,500,000.

The working expenditure on railway signalling to cover which, together with all the other expenditure items, the charges had to be fixed, might, therefore, be estimated at £9,500,000. Conditions were changing even when the Railway Rates Tribunal was preparing the new charging system, and since 1928 (when it came into force) and the end of 1933, gross railway receipts fell by 20 per cent. Working expenditure, however, was reduced by 17 per cent. No group has yet earned its standard revenue. In 1933 there was a deficiency of £22,495,704 for the four companies; thus it will be seen that the standard revenue machinery established under the provisions of the Railways Act of 1921 has (up to the present at any rate) failed to function properly so far as the shareholders are concerned. It will be gathered, therefore, that the original provisions for working expenditure—including the allowance for signalling—have never borne the precise relationship to receipts as was contemplated.

It will be of interest to see how signalling expenditure fared during the period 1928 to 1933. For this purpose, it will be more satisfactory to deal with the major items only, in regard to which exact figures are available. Maintenance expenditure includes renewals; perhaps a more correct method would be to exclude this element and add a proper annual provision, but I suggest that having regard to the six years' survey the expenditure might be taken as being close enough to the provision.

	MAINTENANCE OF SIGNALLING					
	1928	1929	1930	1931	1932	1933
L.M.S.R. . .	£ 607,780	633,716	585,351	593,534	646,705	628,676
L.N.E.R. . .	584,411	570,457	567,406	553,270	495,438	520,140
G.W.R. . .	342,896	322,157	317,881	345,284	323,587	302,271
S.R. . .	441,320	350,676	294,069	367,359	390,102	236,077
	1,976,407	1,877,006	1,764,707	1,859,447	1,855,832	1,687,164
	Decrease 1933 compared with 1928: £289,243.					

* Extracts from a paper read to the Institution of Railway Signal Engineers by Mr. A. J. Pearson, L.M.S.R., Euston, at the general meeting in Manchester on April 10.

MAINTENANCE OF TELEGRAPHS AND TELEPHONES						
	1928	1929	1930	1931	1932	1933
L.M.S.R. ..	176,808	193,918	202,505	159,640	169,973	159,926
L.N.E.R. ..	146,624	140,877	129,161	116,892	117,864	140,441
G.W.R. ..	89,889	95,521	85,828	92,892	90,092	120,914
S.R. ..	56,227	83,389	89,916	115,041	72,456	57,310
	469,548	513,705	507,410	484,465	450,385	478,591

Increase 1933 compared with 1928: £9,043.

It is of interest to compare the maintenance expenditure expressed as percentages of gross receipts:—

MAINTENANCE OF SIGNALLING AS PERCENTAGE OF RAILWAY RECEIPTS

	1928	1929	1930	1931	1932	1933
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
L.M.S.R. ..	0.82	0.86	0.85	0.93	1.10	1.08
L.N.E.R. ..	1.08	1.02	1.08	1.17	1.16	1.21
G.W.R. ..	1.12	1.03	1.07	1.28	1.32	1.23
S.R. ..	1.91	1.52	1.31	1.73	1.98	1.18

MAINTENANCE OF TELEGRAPHS AND TELEPHONES AS PERCENTAGE OF RAILWAY RECEIPTS

	1928	1929	1930	1931	1932	1933
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
L.M.S.R. ..	0.23	0.26	0.29	0.25	0.29	0.27
L.N.E.R. ..	0.27	0.25	0.24	0.24	0.27	0.32
G.W.R. ..	0.29	0.37	0.29	0.34	0.36	0.49
S.R. ..	0.24	0.36	0.40	0.54	0.36	0.28

While it is not possible, owing to differences in method, to compare the relative proportions paid out of receipts towards maintenance by the four companies, it will be observed that the tendency has been for a larger percentage to be expended on signalling and telegraph maintenance, despite the economy campaigns of the trade depression period.

Let us look now at signalmen's wages. The following table shows the expenditure incurred over the same period:—

WAGES OF SIGNALMEN AND CROSSING KEEPERS

	1928	1929	1930	1931	1932	1933
L.M.S.R. ..	£ 2,176,058	£ 2,171,817	£ 2,149,189	£ 1,997,124	£ 1,904,404	£ 1,879,228
L.N.E.R. ..	1,628,857	1,595,426	1,601,406	1,488,866	1,407,804	1,372,515
G.W.R. ..	884,278	879,722	868,632	814,792	782,593	762,554
S.R. ..	604,880	582,894	579,296	548,850	516,292	497,659
	5,294,071	5,229,859	5,198,523	4,849,632	4,611,093	4,511,956

Decrease 1933 compared with 1928: £782,115.

We can now compute the percentage increases or decreases for the four groups separately, 1933 compared with 1928. Where there is a decrease the percentage is printed in italics.

L.M.S.R. L.N.E.R. G.W.R. S.R.
Maintenance of signalling .. 3·4 10·9 11·8 46·5

(1) Maintenance of telegraphs and telephones .. 9·5 4·2 34·5 1·9

Wages of signalmen and crossing keepers 13·6 15·7 13·7 17·7

(1) This figure includes the maintenance of "block" instruments, but also of all telegraph and telephone apparatus.

It will be seen, therefore, that, generally speaking, the cost of maintenance has not fallen so acutely as the expenditure involved in paying the wages of signalmen and crossing keepers. But the amounts of maintenance expenditure given above are likely to be very misleading unless some regard is paid to transfers to or from the Renewal Accounts. These, however, are not dissected in the financial statements, but it should be mentioned that when allowance is made for this factor the huge decrease

in signalling maintenance shown for the Southern Railway becomes a slight decrease, while the increase of 34·5 per cent. incurred by the G.W.R. in maintenance shown of telegraphs and telephones is turned to a decrease. To make the point clear, it is interesting to examine the figures which are given to the Railway Rates Tribunal each year:—

MAINTENANCE OF SIGNALLING

	1928	1929	1930	1931	1932	1933
L.N.E.R. ..	£ 584,411	£ 570,457	£ 567,406	£ 553,270	£ 495,438	£ 520,140
Transfer to or from renewal account ..	11,653	5,053	4,094	93,591	8,640	12,515
Total ..	572,758	565,404	563,312	459,679	486,798	477,595
G.W.R. ..	342,896	322,157	317,881	345,284	323,587	302,271
Transfer to or from renewal account ..	*	4,438	14,850	78,467	65,045	51,197
Total ..	317,719	303,031	266,817	258,542	247,774	
S.R. ..	441,320	350,676	294,069	367,359	390,102	236,077
Transfer to or from renewal account ..	181,753	64,732	27,406	79,874	135,506	28,057
Total ..	259,567	285,944	266,663	287,485	254,596	264,134

MAINTENANCE OF TELEGRAPHS AND TELEPHONES

	1928	1929	1930	1931	1932	1933
L.N.E.R. ..	£ 146,625	£ 140,877	£ 129,161	£ 116,892	£ 117,864	£ 140,441
Transfer to or from renewal account ..	8,588	69	1,779	5,271	1,005	4,690
Total ..	138,037	140,946	127,382	111,621	116,859	135,751
G.W.R. ..	89,899	95,521	86,828	92,892	90,092	120,914
Transfer to or from renewal account ..	*	596	6,591	15,499	17,376	10,202
Total ..	94,935	92,419	77,393	72,716	80,712	
S.R. ..	56,227	83,389	89,916	115,041	72,456	57,310
Transfer to or from renewal account ..	28,641	5,158	18,577	46,827	12,609	2,546
Total ..	84,868	88,547	71,339	68,214	59,847	54,764

PERCENTAGE INCREASE OR DECREASE 1933 COMPARED WITH 1928

L.N.E.R.	G.W.R.	S.R.
Maintenance of signalling ..	16·6	22·0*
Maintenance of telegraphs and telephones ..	1·6	14·9*
Signalling, telegraphs, and telephones combined ..	13·7	20·3*
		7·4

In examining the details of transfers to or from the Renewal Account, it will be seen that the credits have often been increased considerably—comparing one year with another, e.g., in 1930 the G.W.R. credit for signalling was £14,850, whereas in 1931 the credit was £78,467. An explanation of this is to be found in the proceedings of the Railway Rates Tribunal in June, 1932. Mr. W. V. Wood was giving evidence at the annual review on behalf of the four groups, and he informed the Court as follows:—

Mr. A. Tylor (examining on behalf of the railway companies): In the case of the Great Western Railway Company, R.T.R.4 (c), on page 10, I think there is something to which you would like to call the attention of the Tribunal with regard to transfers?—Mr. Wood: Yes; there are a number of transfers from the renewal account there. Will you take the third item, "Bridges, tunnels, &c."? In 1931 there is a deduction of £19,000 odd as compared with 1930, when there was an addition of £60,000. The figures in italics mean credits. Then further down, in the case of "Maintenance of signalling," there is a similar thing, and you see in 1931 a deduction of £78,000 as compared with a deduction of £14,000.

* In the case of the G.W.R. the comparison is based on 1933 against 1929, as the 1929 statement does not show the amounts transferred to or from the renewal account.

in 1930. Then immediately under that there is the item of "Maintenance of telegraphs and telephones," and in that case there was a deduction of £15,000 in 1931, and an addition of £6,000 in 1930. . . . Those are exceptional amounts transferred in respect of the new works carried out under the Government Employment schemes. That is the main reason why there are those large differences.

The exceptional nature of the items may be seen from the fact that the assistance given by the Government under the Development (Loan Guarantees and Grants) Act, 1929, is no longer available, Section 6 of Part III of the Act providing that "the power of giving guarantees and of making grants under this Act shall be exerciseable only within a period of three years from August 31, 1929."

It is really only to be expected—in view of the extensive developments in signalling methods during recent years—that the cost of maintenance would not fall so sharply as the cost of staffing the signal-boxes. The electrical operation of points and signals and the rapid growth in track circuit will naturally mean additional maintenance work, and it will be observed from the following table that the staff employed in this department has remained practically constant since 1928:—

SIGNAL AND TELEGRAPH ENGINEER'S DEPARTMENT

		L.M.S.R.		L.N.E.R.	
		1928	1934	1928	1934
Gangers	..	..	93	71	81
Installers	..	..	140	142	135
Labourers	..	..	596	760	507
Linemen	..	..	1,248	1,277	684
Chief linemen	..	..	59	50	15
Wiremen and fixers	..	..	293	289	206
Other grades	..	..	61	42	9
Total	..	..	2,490	2,631	1,637
		G.W.R.		S.R.	
		1928	1934	1928	1934
Gangers	..	122	84	59	39
Installers	..	319	282	43	22
Labourers	..	243	214	231	172
Linemen	..	801	729	442	578
Chief linemen	..	50	56	35	41
Wiremen and fixers	..	148	149	62	50
Other grades	..	19	22	44	39
Total	..	1,702	1,536	916	941
		Total		Total	
		1928	1934	1928	1934
Gangers	..	315	280	355	280
Installers	..	637	570	637	570
Labourers	..	1,577	1,604	3,175	3,269
Linemen	..	159	157	159	157
Chief linemen	..	709	694	709	694
Wiremen and fixers	..	133	122	133	122
Total	..	6,745	6,696	6,745	6,696

Decrease 1934 compared with 1928 : 49, or 0·72 per cent.

In comparing the figures, in the financial tables given above, regard should be paid to the possibility of a decrease in the prices of materials over the period; moreover, the 1928 figure reflects only a small proportion of the 2½ per cent. deduction from staff earnings (which operated from August 13, 1928) as against a deduction of some 4 per cent. during the whole of 1933.

One of the main objects of signalling modernisation has been to effect direct savings, and in supplementation of the figures already given it is interesting to examine the total number of signalmen and crossing keepers employed by the four groups during the period of this survey:—

At March 10, At March 11,
1928 1934

Signalmen, porter-signalmen, crossing keepers, and signal-box lads	31,874	28,774
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Decrease, 1934 : 3,100, or 9·7 per cent.

Obviously, a large proportion of this economy could be secured only by the spending of capital. When giving evidence before the Railway Rates Tribunal in 1933, Sir Ralph Wedgwood gave some interesting details regarding schemes involving capital expenditure which had been embarked upon by the L.N.E.R. in order to realise economy. On the question of signalling, he informed the court that they had carried out 285 schemes at a capital expenditure of £472,000, with the result that an annual

saving of £97,000, or roughly 20 per cent. had been effected. In 1931 in his speech at the annual general meeting, Sir Josiah Stamp gave details of the economies secured by the L.M.S.R. "During the past two years," he said, "fifty-seven schemes have been completed, the annual amount thus saved totalling £12,257, giving a return of 47 per cent. on the outlay involved." Referring to the subject again in 1933, the chairman of the L.M.S. stated that the installation of automatic colour-light signalling on the electrified lines between Camden and Watford Junction had enabled 13 signal-boxes to be dispensed with, thus effecting an annual saving of £4,350. In 1934, 81 schemes were completed giving a return of over 20 per cent. on the outlay.

At the annual general meeting of the Southern Railway in 1934 the Chairman of the company referred to the economies that had been effected on that system. He pointed out that to some extent the economies were the outcome of the expenditure devoted in recent years to the carrying out of works for the improvement and modernising of the undertaking. "As a striking example of what has been accomplished in this way," he added, "I may mention the installation of up-to-date methods of signalling, which has enabled us to close more than 200 signal-boxes and to effect a saving of some £900,000* a year in the cost of signalling."

It will be recalled that when the estimate of working expenditure was made for the model year in connection with the revision of railway charges, railway signalling was calculated to involve some £9,500,000. It has been pointed out that this figure is now of little use for practical purposes. Receipts have fallen very considerably since then, and, as we have seen, every effort has had to be made to reduce expenditure to the lowest limit without impairing efficiency. I estimate that the approximate working expenditure on signalling in 1933 was as follows:—

MAINTENANCE

(1) Superintendence	175,000
Signalling	1,687,164
(2) Telegraphs and telephones	478,591
(1) Allowance for workmen's compensation, N.H.I., &c.	45,000

TRAFFIC

Wages of signalmen and crossing keepers	4,511,956
(1) Allowance for cabin heating, lighting, N.H.I., workmen's compensation, &c...	1,127,989
	8,025,700

Say £8,000,000, and thus allow for the inclusion of non-signalling items under "Telegraphs and telephones."

(1) Estimate.

(2) Includes "block" instruments, but also all telegraph and telephone apparatus.

It must be emphasised that this estimate of £8,000,000 is for working expenditure only and excludes interest. If the total cost per annum is required, naturally interest will have to be brought in. From various calculations I have made, I estimate that the capital cost of railway signalling equipment might be put conservatively at £55,000,000. Taking interest at 4½ per cent. the amount is £2,475,000. Thus, the total annual cost of railway signalling (maintenance and working) is approximately £8,000,000 + £2,475,000 (interest) = £10,475,000—say, £10½ millions.

It is of interest to note what the average railway user paying £1 for conveyance of himself and his property contributed towards the cost of signalling in 1933. Quite clearly, a 4½ per cent. rate of interest was not earned on the capital cost of signalling equipment in that year, and

* This figure should be £90,000. *Vide THE RAILWAY GAZETTE*, March 9, 1934, page 408.—ED. R.G.

it would therefore be unsound to apply that rate in this particular calculation. Railway net receipts in 1933 (£26,000,000) expressed as a percentage of the total capital expended upon the railway (£963,000,000) were 2·7 per cent.; railway gross receipts were approximately £145,000,000, and working expenditure amounted to £119,000,000. We can now make the following calculation:—

	Working expenditure	Return on railway capital of £963,000,000	Total
Use of signalling ..	£8,000,000	£1,500,000*	£9,500,000
Use of all other items	111,000,000	24,500,000	135,500,000
	<hr/>	<hr/>	<hr/>
	119,000,000	26,000,000	145,000,000
	Working expenditure	Railway capital	Total
	s. d.	s. d.	s. d.
Use of signalling ..	1 1	0 2½	1 3½
Use of all other items	15 4	3 4½	18 8½
	<hr/>	<hr/>	<hr/>
	16 5	3 7	20 0

The average user therefore paid for signalling in 1933 1s. 3½d. in every £1. This amount may not seem large, but when it is remembered that £145,000,000 was paid to the railway companies by the public in 1933 for rail services rendered, it will be appreciated that the total amount is not insignificant.

It is clearly not possible to attempt an evaluation in monetary terms of the economies that have been effected by increased line capacity resulting from the modernisation of signalling equipment, thus avoiding the necessity for track widening. Similarly, nothing can be quantified for increased efficiency and safety; but obviously one must have these factors in mind in considering any figures relating to signalling expenditure—in addition to the direct savings already mentioned.

There is no conclusion to this survey for the subject admits of no conclusion. I realise that what I have had to say is somewhat tentative in view of the difficulty in dissecting the accounts; but during the last year or two I have often pondered over the financial relationship of signalling to the railway activity as a whole. The task of preparing this paper has therefore given me no little pleasure, and I can only hope I have not wasted your evening.

The Discussion

At the conclusion of the paper, the Hon. Secretary (Mr. M. G. Tweedie) read a communication from Mr. B. F. Wagenrieder, who said that the 25 per cent. added in the Salter report was challenged, and that he thought that 20 per cent. should be sufficient. He doubted, too, the sum of £55 millions as the capital cost of signalling; he considered that figure to be too high.

Mr. P. Lomas, in opening the discussion, drew attention to the many references in the paper to money having been spent on signalling, and yet there was a decrease shown of £289,243. That was a compliment to the signal engineer, and he took off his hat to an accountant who had called attention to it. Those economies had, moreover, been achieved without any sacrifice in safety.

Mr. H. M. Proud remarked that when one played with figures one could produce all sorts of astonishing results. Might not prices of material have had some influence on the results given by the author? There were many things in the paper that could be argued about and he would like someone to give some examples of how much better

they did things today. What influence had the cost of maintenance on the better continuity of service and the more reliable means of transport they were enjoying now in comparison with former days?

Mr. W. S. Roberts considered that it would have been better if the paper had been read in London where it would have had a wider audience. On the subject of reducing the cost of maintenance to suit the fall in receipts they must have vision. They might economise for two or three years and then find that they had to spend all their savings to make up the leeway lost.

Mr. S. W. Spendlove thought that it was most important that it should be known that no economies had been brought about by any departure from efficient working or in the safety of the equipment. Mr. R. S. Griffiths pressed the point that the signal engineer could be helped by the man on the spot showing that certain methods were necessary for particular jobs. If they applied that kind of knowledge to their work further economies would be possible; it might be in pennies and shillings but they would all help.

Mr. W. L. Box spoke of the remarkable results that were being experienced in the freedom from failure of the automatic signals on the Liverpool Overhead Railway.

Mr. W. R. Jones said that the public were interested in the maintenance of signalling. After all, they were trustees for the public safety and in spending the money allocated to them for signalling signal engineers were performing a sacred trust. They had, over and over again, received from the men suggestions that had been adopted and that had resulted in economies but without sacrificing efficiency.

Mr. G. Morris asked how they were going to tell whether the figure of £8 millions was or was not reasonable.

The President, in concluding the discussion, said that like the rest of the speakers he felt that he would be on dangerous ground in criticising the facts which the author had given. He congratulated him on the vast amount of information furnished which would form a very valuable addition to the Proceedings of the Institution.

The author, replying, said that the whole tone of the paper was to show what signalling cost. He had put the figure at £10½ millions. In the old days, before the Signal Department had attained Cabinet rank, the huge expenditure involved in signalling was apparently not appreciated; today it was realised that the figure was one for attack on the ground of economy. It was true, as Mr. Wagenrieder had said, that the amount of 25 per cent. was challenged, but it was afterwards shown by the railway companies to be correct. Answering Mr. Morris, he thought that the sum of £8 millions was reasonable. Wherever economies could be produced by modernisation they were being tried. It was very much a question of finance; but they had to take the long view, as well as to speculate about the elimination of waste. A very hearty vote of thanks to the author, and an appreciation to the L.M.S. officers for their courtesy, closed the meeting.

THE BALTIC EXPRESS.—Communications in Northern Europe are to be improved, from May 15, by the introduction of an accelerated service from Tallinn, Estonia, to Berlin, to be known as the Baltic Express. Leaving Tallinn at 4 p.m., it will stop only twice before crossing the Latvian border, and Riga, the Latvian capital will be reached in the late evening. Lithuania will be crossed during the night, and Berlin will be reached at 6 p.m. the next day—an acceleration of, roughly, 5 hours on the best previous time. Traffic to and from Finland will be facilitated at the same time, by means of the steamer service across the Gulf of Finland, between Helsingfors and Tallinn, connecting with the new train.

* 2·7 per cent. of £55,000,000 is £1,485,000—say, £1,500,000.

RAILWAY MAINTENANCE PROBLEMS, V.—SUPERSTRUCTURES

By Lt.-Col. H. A. HULL, M.Inst.C.E., District Engineer, Northampton, L.N.W.R. & L.M.S.R., 1918-33

Notwithstanding all the knowledge now available in print, some of the most essential and elementary facts are often ignored. There are always pioneers at work, on whose heels follow those with ingenious minds to record their results as formulae for the future guidance of the unimaginative or timid.

FROM the maintenance point of view, a superstructure of stone, brick or concrete, reinforced or otherwise, is preferable to one of wood, steel or iron, for apart from the tendency towards more rapid deterioration of the latter, they are more subject to vibration set up by traffic, which may cause rivets to work loose. Vibration may be minimised if a layer of ballast can be used over the bridge floor and a layer of suitable preservative, such as asphalt, protected with a hard coating from the cutting action of the ballast.

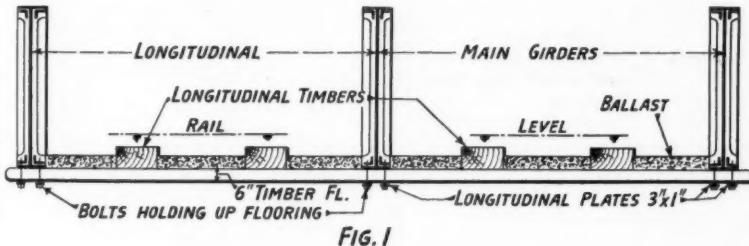
In the writer's district there were several bridges, with wooden floors, which had decayed to such an extent as to necessitate complete renewal. Since, although steel is about twelve times the weight of the class of timber generally used in bridge floors, it is approximately twelve times as strong, and therefore can be used to provide new floors composed of cross joists or girders with a steel floor plate protected and covered with ballast. In some of the bridges under consideration, the timber flooring was suspended by bolts from the flanges of the main girders, as shown in Fig. 1. Fig. 2 illustrates the method adopted for temporarily strengthening such a floor pending its renewal. The work of substituting the old rails for the timbers was carried out on a Sunday under complete possession of both running roads.

The type of superstructure found most satisfactory by the writer, whilst being comparatively cheap in construction and blanketing against vibration, required the least maintenance. Three variations of the same general design are shown in Figs. 3a, 3b, and 3c. An additional advantage of this type is that when used for underbridges the permanent way may be laid in any position upon the ballast. Fig. 1a shows joists and brick jack arches with concrete backing; Fig. 3b, joists with concrete filling formed as jack arches; and Fig. 3c a plain steel floor plate carried on joists, this type being used when there is not enough headway for either of the others.

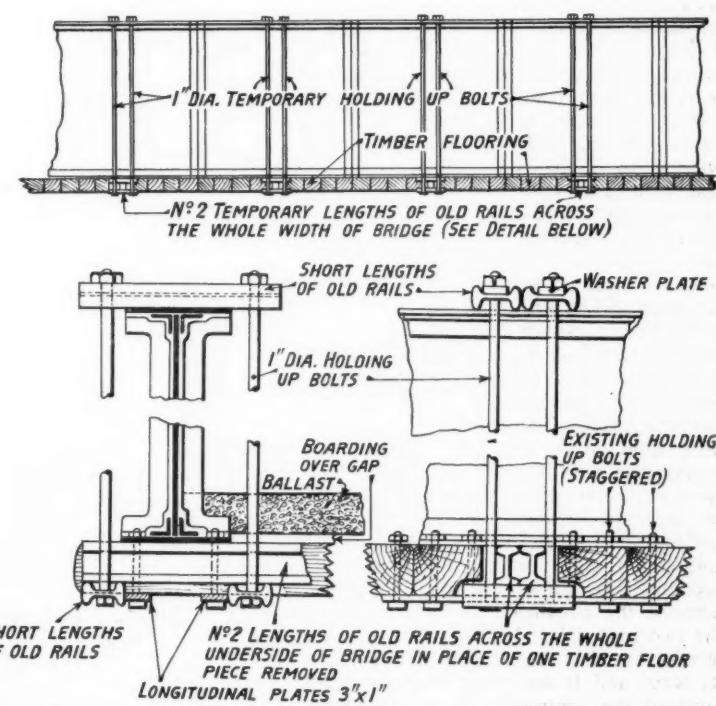
Trough girders carrying longitudinal timbers for the chairs and rails should be avoided. It is difficult to paint or otherwise protect the inside of the steel trough, and such a type of superstructure is often found to act as a rattle box, with the result that the rivets work loose and other defects occur. The writer experienced several instances in which the bottom

plates of the trough, usually $\frac{3}{8}$ in. thick, developed longitudinal cracks. When the timber was removed so that the plate could be replaced, it was found that the trouble had originated from vibration, causing a slight movement of the timber in the trough which, combined with grit and moisture which had worked its way between the bottom of the timber and the plate, had set up a grinding action. This, in turn, had gradually worn away the softer surface of the timber, leaving knots of the harder part of the wood protruding downwards. These had been acting as punches on the plate under the moving traffic, which had apparently been the cause of the crack.

This phenomenon of the harder wood in a piece of timber eventually affecting the metal with which it is in contact, is well illustrated by the condition of the under-

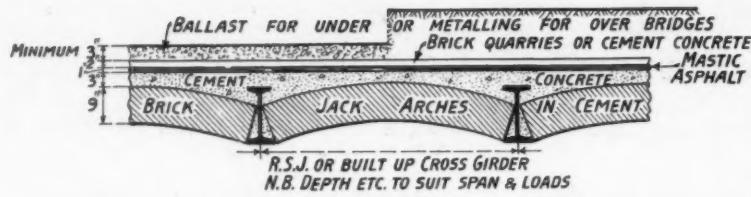


Cross section showing original timber flooring



Method of temporarily strengthening timber floor

May 10, 1935



CROSS GIRDERS TO BE CAMBERED TO SUIT SPAN AND THE WHOLE OF THE CONSTRUCTIONAL WORK ON TOP TO FOLLOW THE CAMBER OF THE MAIN GIRDERS FOR DRAINAGE PURPOSES

FIG. 3 a

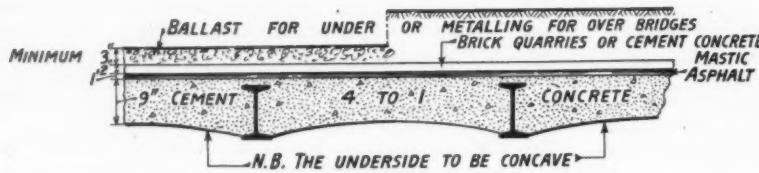


FIG. 3 b



FIG. 3 c

'Details of the best types of bridge floor'

side of cast iron chairs which have been removed from their sleepers after many years of service and which often then show the marks of the timber graining of the sleeper. When, therefore, this type of floor cannot be avoided, the longitudinal timbers should be so selected as to be free from knots on the underside.

It is a mistake to paint steel or iron work with red lead if brick or concrete work is to be in close contact with it. The writer once had to defend a contractor from the charge of inferior work when some brick panelling, as shown in Fig. 4, was condemned as faulty because moisture was percolating through the panelling and appearing at the inside edge of the bottom flange of the main girders. The contract had stipulated that all steel or ironwork should be painted with two coats of lead paint before it left the contractor's yard. The panelling was built with blue brick in cement, tight up against the web of the main girder, but close examination revealed a definite line of cleavage between the paint on the girder and the brickwork, which opened and closed under variations of weather, probably because of too much variation between the co-efficients of expansion of the two materials. It was down this line of cleavage that the moisture was making its way, and it was therefore due to no fault of the contractor or of the supervision of the work.

From that time onwards all girder work in similar conditions was left unpainted.

any rusting which might have occurred before the work was placed being brushed off before beginning the brickwork or concreting. As a further precaution a recess was left at the top of the brick or concrete work against the girder for a fillet of mastic asphalt to be run in, and on the top of that, when the work was exposed to outside weather conditions, a drip angle iron, as shown in the details in Fig. 5, was provided. Experience has shown these precautionary measures to have been completely effective.

As in the manufacture of tar macadam, so when applying mastic asphalt to steel or iron work the temperature of the metal should be brought up as nearly as possible to that of the tar or asphalt before application of the latter. This is necessary to ensure proper adhesion without air bubbles. In girder work and floor plates where it is not practicable to do this, the best alternative is to give the metal a wash of neat cement and to let this dry before applying the asphalt. The writer experienced several instances, where an asphalt covering had been placed on the top of an exposed girder with the object of saving future painting, which gave unmistakable signs of lack of mutual adhesion, to such a degree that the girder work

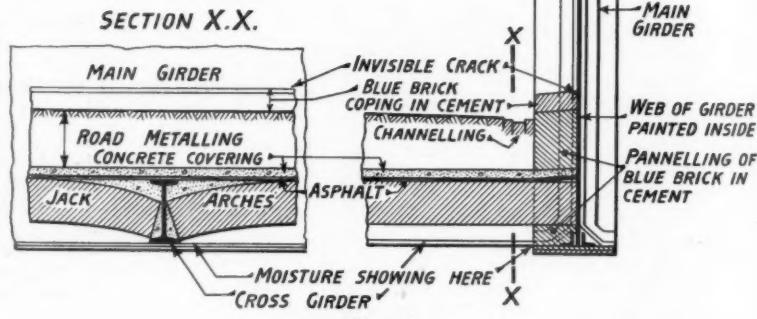


FIG. 4

Brick or concrete panelling against steel work

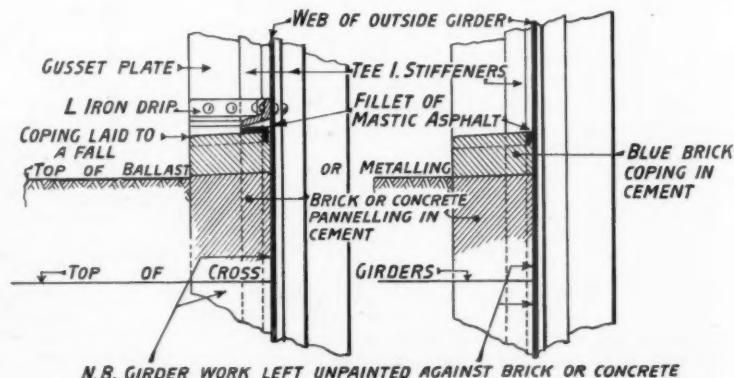


FIG. 5

Correct method of weathering for the above

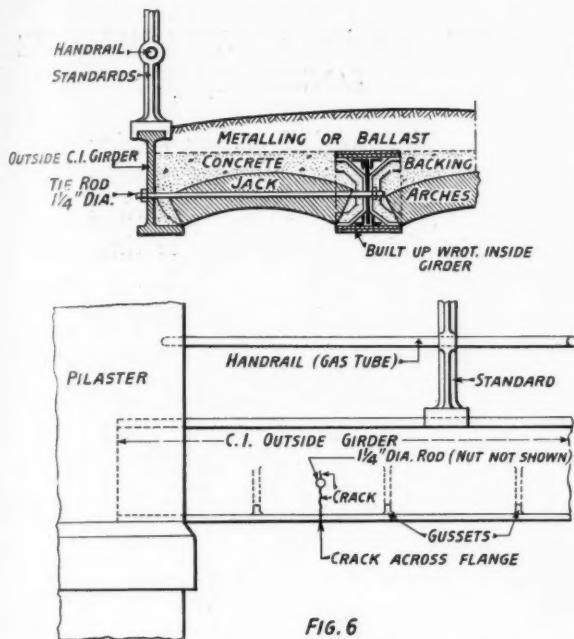


FIG. 6

Tie rods and cracks in cast iron girders

was actually rusting and breaking the asphalt away. The so-called protective covering had therefore to be entirely removed and the girder cleaned and painted. Too much care cannot be taken when applying these coverings so that they may be effective and not become a source of danger.

In jack arch bridge superstructures tie rods are commonly provided in the outside bays for the ostensible purpose of counteracting the presumed thrust of the jack arch. The writer's experience confirms him in the belief that if jack arches are of brickwork built in cement mortar, or composed entirely of concrete, the tie rods cease to function as soon as the arch work has set. They may indeed become the probable cause, otherwise inexplicable, of cracks in longitudinal cast iron girders, where these have been used again as outside girders when wrought iron

girders have replaced the interior cast iron girders. When the new jack arches are built between the girders with tie rods inserted, cracks have formed in these outside cast iron girders, despite the fact that they were carrying a much smaller proportion of the loads than the interior girders. Such cracks invariably started at the hole in the web containing the $1\frac{1}{2}$ in. diameter tie bar, see Fig. 6, and travelled downwards to the bottom flange, which was broken through.

It is a commonly known fact that brick jack arches built many years ago when the mortar could only have been of lime, which had in the course of time set as hard as concrete, have acted as the main support of the load when one of the interior girders has cracked right through its section. Subsequent examination of the severed parts have revealed that the crack must have been in existence for a considerable time, thus proving that the jack arches had themselves been doing the work of the girder. The writer came across one such instance in an underbridge.

In all such cases perfect adhesion was found between the mortar or cement and the cast iron of the girder, so that there could be no suggestion of any wedge action having taken place from loose ballast or other material having worked down under vibration. As the jack arches were rigid in themselves, there was ostensibly nothing for the tie rod to do. The crack invariably started from the tie rod hole when the tie rods were in place, and careful measurements revealed that, allowing for the somewhat uneven outside face of the web casting, there was a distinct indication that the web was slightly concave at the side of the crack, thus indicating that the tie rod, which had had its nut screwed up tight, probably in warm weather, had so contracted in a cold spell as to put an enormous pressure locally on the web of the girder, eventually cracking it.

As a test, the cracks in the web and the lower flange were in two cases welded up *in situ* by an outside firm. A spring washer was inserted under the nut in one of the instances to allow for the expansion and contraction of the tie rod in future. This was done to the remaining tie rods on the particular bridge. The welded girders have remained sound since the cracks were welded several years ago, and it may therefore be assumed that this method of treatment is successful.

(We hope to publish the next article in this series in our issue dated June 7. Previous articles appeared in our January 18, February 15, March 15th and April 12 issues.)

Southern Railway Carriage Advertising Exhibition

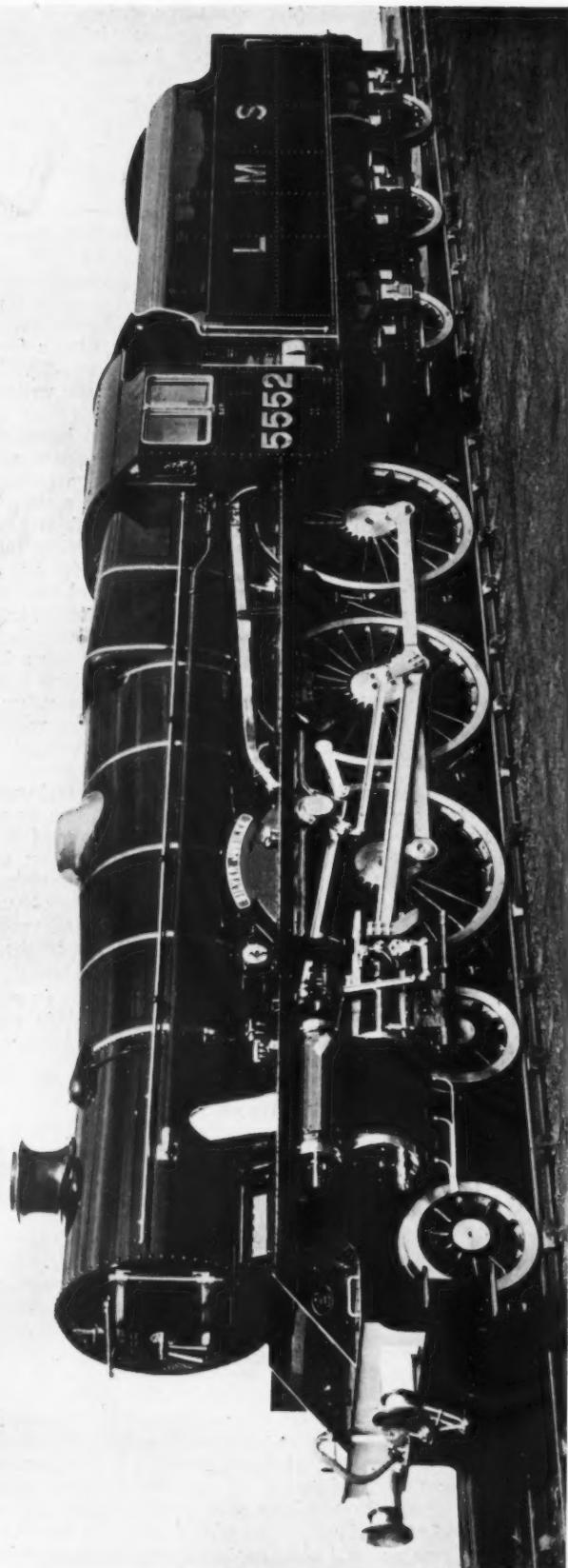
IN last week's issue we dealt, in an editorial note, with the carriage advertising exhibition arranged by the Southern Railway at Cannon Street station on May 1. At the invitation of the company we were enabled to visit this exhibition, which embraced nine coaches of the latest steam and electric types; side-corridor vehicles for the Kent Coast and Hastings services, one of the latest dining cars, a centre-corridor "nondescript" coach, such as is used on the Continental trains, and two two-coach side-corridor units for the electric coastwise traffic, of a new pattern completed in connection with the Brighton-Eastbourne-Hastings electrification. The extremely comfortable seating is a feature of all this stock, the back-slopes and general upholstery being particularly well arranged. The artistic shades of the upholstery shows up the advertisements displayed to the best advantage.

There was no carriage advertising in any first class compartment or in the dining car which is of this class; instead, there are excellent photographs of Southern Railway beauty spots. In each side-corridor third class com-

partment there are two advertising panels, a mirror and a map displayed in such a position that they can hardly fail to catch the eye. No two commercial advertisements are shown side by side, a plan which is all the more advantageous to advertisers. These advertisements may be arranged for general distribution throughout the system, or confined to the greater London area or, in some cases, to other specified areas or services. (See picture on p. 944.)

Whereas the Southern carried under 282 million passengers in 1926, all but 338 million were carried in 1934. During the past year traffic has increased by over 4 per cent., though in the areas served by the Brighton and Worthing and by the Reigate and Three Bridges electrifications, the increases were roughly 7 and 11 per cent.

The Southern Railway therefore provides a very favourable medium for carriage advertising, and this interesting and well arranged exhibition should assist materially in filling and keeping filled the remaining available panels in both the new and old coaching stock, and in stimulating general interest in this form of advertisement.



L.M.S.R. locomotive No. 5552 "Silver Jubilee," in black livery with chromium plated fittings

THE L.M.S.R. SILVER JUBILEE LOCOMOTIVE

A special chromium plating process was adopted for the finish of this engine, which is giving its name to the class

THE new L.M.S. 5XP class three-cylinder passenger engine No. 5552, *Silver Jubilee*, illustrated on page 872 of last week's issue during its exhibition at Euston, together with the ex-L.N.W.R. 4-4-0 *Coronation* of 1911, is again shown herewith. The black and silver finish, which was greatly admired, is most effective, and as was stated in our previous notice it involved the use of a special chromium plating process. This is marketed by Portable Chromium Platers Ltd., 83, Cannon Street, London. By this means copper, nickel, cadmium, chromium and silver are electro-deposited on the surfaces to be treated, and the deposits are so merged with the metal base that peeling and stripping cannot occur. The plated surface is stated to be good for years of service and will stand heat and bending tests of a severe nature. No baths or vats are required, the deposits being sprayed on to the work. The method is extremely simple and economical, and the plant by means of which it is performed has the advantage of being mobile. The work was performed by employees of the firm partly in the railway company's shops at Crewe and partly at the Camden locomotive dépôt; an excellent result was obtained.

The raised letters "L.M.S." on the tender were cut from steel plate, $\frac{1}{8}$ in. thick, and chromium finished by the same process. The engines of this 3-cylinder 4-6-0 series, in future to be known as the "Silver Jubilee" class, are giving very good results in working heavy, fast, and other classes of trains on the L.M.S.R. Their leading dimensions and general characteristics have already been given in the issues of THE RAILWAY GAZETTE for April 27 and August 24, 1934. *Silver Jubilee* was put into traffic on Wednesday last, May 8, working a slow passenger train from Euston to Northampton. It is making its *début* on express trains at the end of this or early next week, probably with one of the two-hour express trains on the London-Birmingham service.

HYDRAULIC TRANSMISSION.—Three important papers on hydraulic transmissions for railway and industrial applications have been read before the Institution of Mechanical Engineers in the past two weeks. On April 26, Mr. Harold Sinclair, of the Hydraulic Coupling & Engineering Co. Ltd., presented a paper entitled "Recent Developments in Hydraulic Couplings." This was followed up on May 3 by a joint paper from Dr. Haworth (of Leyland Motors Limited) and Mr. Lysholm on the Lysholm-Smith torque converter, and by a paper from Dr.-Ing. W. Hahn on Voith turbo-transmissions. All three papers will be dealt with in the *Diesel Railway Traction Supplement* to be presented with next week's issue of THE RAILWAY GAZETTE.

FENCHURCH STREET STATION REMODELLING, L.N.E.R.

A brief outline of some of the considerable difficulties which met the engineers on this work, due to exceedingly cramped space and the necessity for working under very heavy traffic

IN THE RAILWAY GAZETTE of October 6, 1933, we outlined in an editorial article the history and traffic conditions prevailing at Fenchurch Street station. Also, in the same issue, a brief outline of the works then being put in hand and now recently completed was published in the news section. Again, in our issue of November 30 last, some of the principal works then nearing completion were detailed. The general alterations to the trackwork, platforms, and buildings that have been carried out will be obvious from a careful study and comparison of the two plans we publish as Fig. 2 on page 932.

It may at first appear to be a paradox to increase the capacity of the station by reducing the number of platforms from five to four, but this shortage of platform space is more than offset by the increased facilities for ingress and egress of trains secured by the provision of independent tracks, namely, up and down fast and up and down slow, with access to and from all platforms from any line. Under the old layout there was a portion of single line over which both up and down fast trains passed at the entrance to the station. This arrangement seriously interfered with a quick turn-round and required a perfect synchronising of train timing to permit of reasonable working. All this is changed with the new layout just completed and opened to traffic.

The difficulty, from an engineering point of view—as may be appreciated from the illustration on this page—lay in the extremely narrow strip of ground on which the station and layout are situated, which prevented any of the usual temporary deviations, and the problem required very careful thought to plan the carrying out of the work so that little interference would be caused to the ordinary train services. Twelve stages were planned, each stage involving temporary alterations to the permanent way and signalling. As well as careful planning of the order in which the work was to be carried out, there were several engineering works which, though they would normally present comparatively little difficulty, needed the greatest care and forethought in the unfortunately combined circumstances of cramped space and dense traffic at Fenchurch Street. Some of these will now be described briefly.

Front of Warehouse Thrown Back to Provide Extra Track Width

In order to obtain increased width for the tracks, it was necessary to remove the engine turntable just outside the station—as seen in Figs. 2 and 5—to cut down and set back the corner of the Royal Mint Street East ware-

house (Figs. 5, 6 and 7) and at the same time remove the wagon hoist that served the vaults of the warehouse below the level of the main line, where a network of sidings feeds the various storage warehouses within the main building. This was one of the first works undertaken. The warehouse has seven floors, two of which are below the level of the main line, and all of these floors had to be supported temporarily while the main wall was taken down and the new wall built further back. The extra



Fig. 1—General view of remodelled approach, showing new platforms: the girders of Minories bridge are in the foreground. Note how closely various buildings abut upon the tracks

width obtained, afforded space for a 30-ton hydraulic wagon hoist (Fig. 7) to take the place of one that had been removed.

New Subway Cut Through Arch

The station and approaches thereto are carried on arched viaducts and steel bridgework. Under the station itself the arches towards the main entrance are used for station purposes, and for offices entered from Crutched Friars frontage. Between Crutched Friars and Vine Street, the arches are used as a bonded warehouse and those between Vine Street and Minories, as a tea warehouse. During the reconstruction of the station the upper surfaces of the arches were coated with asphalt to prevent the water from standing engines percolating through to the tenancies underneath. A new entrance from John Street was constructed leading to a subway driven through the arches occupied by the bonded stores, and this is shown in Figs. 3, 4, 8, and 9. The construction of this subway demanded meti-

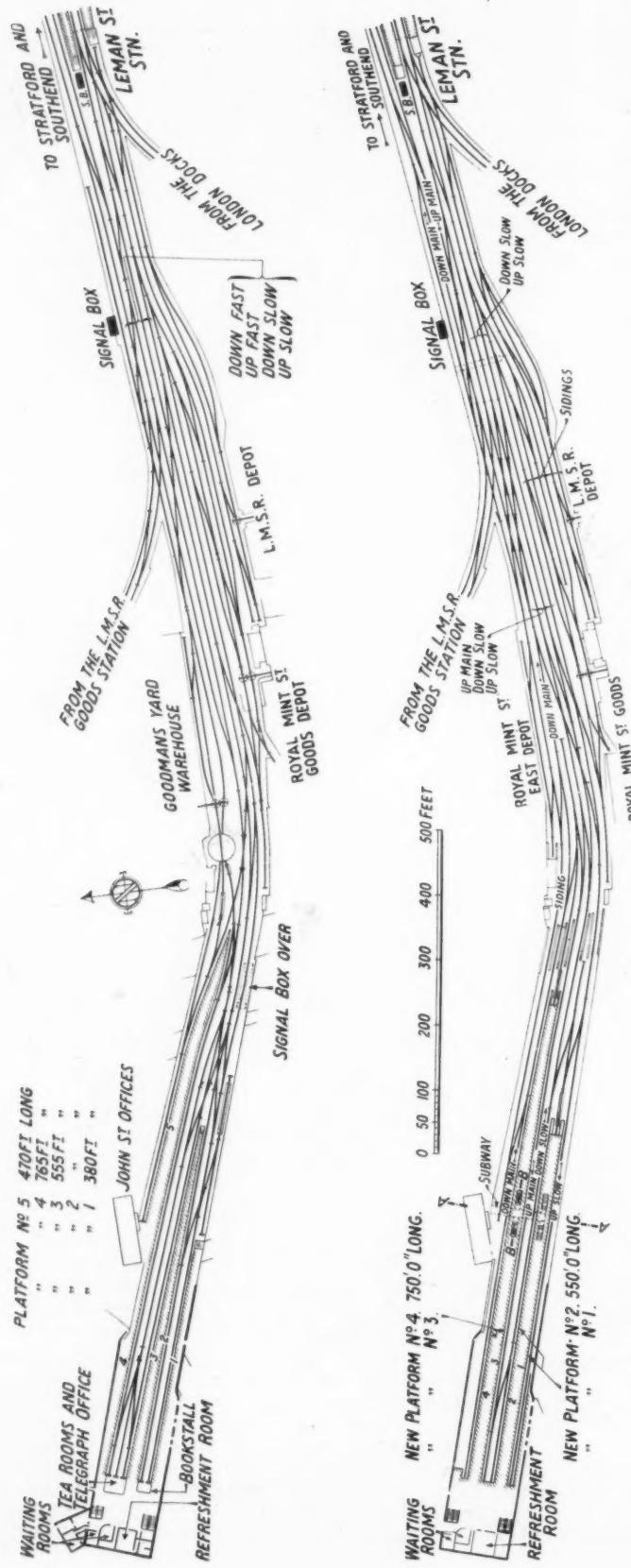
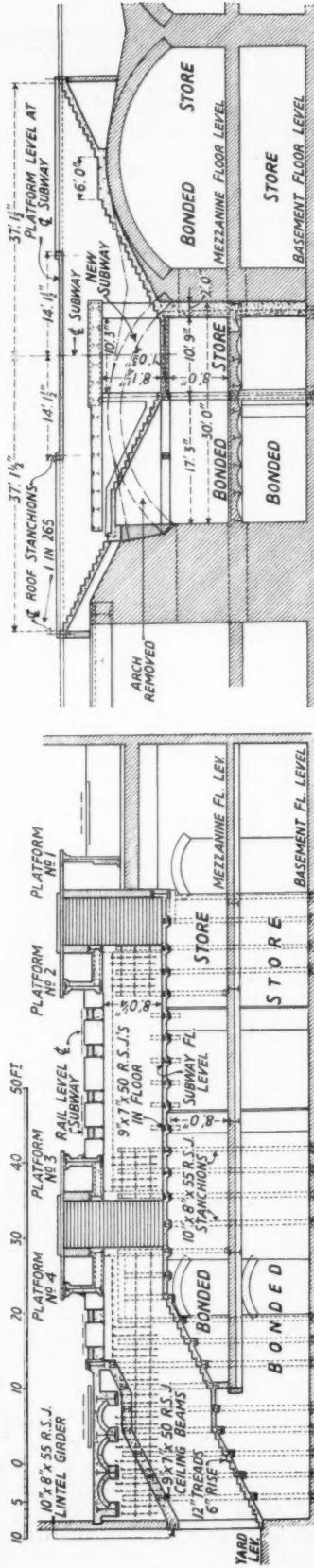


Fig. 2 (upper plan above)—Old layout at Fenchurch Street before remodelling: (lower plan above)—new layout and station as reconstructed

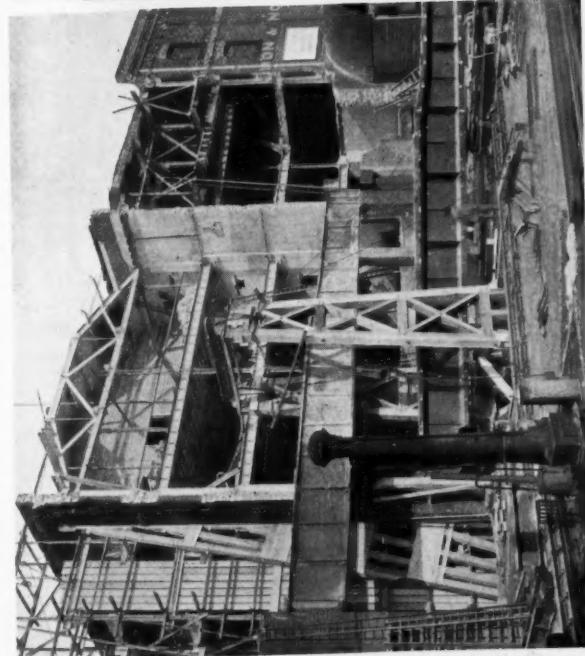
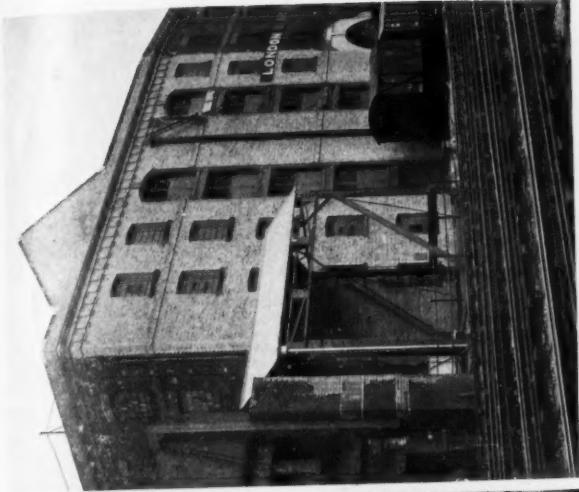


SECTION A.A.

Fig. 3 (left)—Cross section at AA in Fig. 2 above, through subway (longitudinally) and bonded stores, also showing new positions of platforms and tracks

SECTION B.B.

Fig. 4 (right)—Cross section at BB through arching and subway, parallel to platforms and tracks



ABOVE : THROWING BACK THE FRONT OF ROYAL MINT STREET EAST WAREHOUSE

Fig. 5 (left)—Warehouse before alteration; the locomotive turntable is seen in the recess under the large girder. The old wagon hoist serving the warehouse vaults is beneath the arched canopy behind water-column. It was served by means of a wagon turntable.

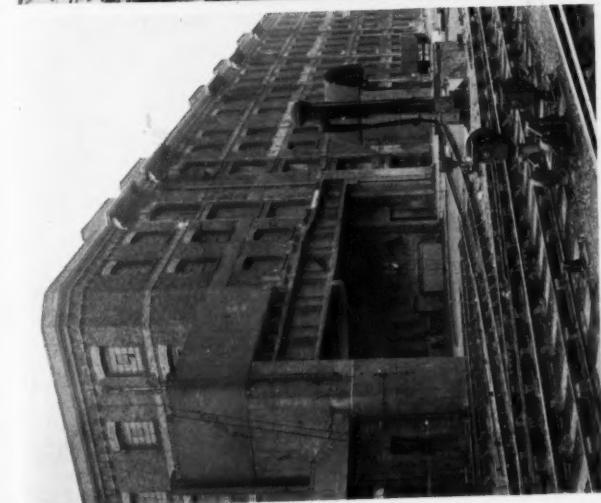
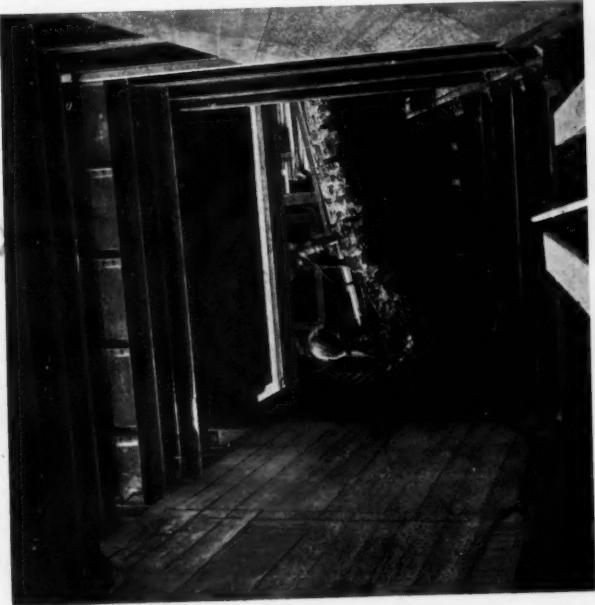
Fig. 6—Warehouse with front wall demolished and others shored up during alteration. The large girders that supported the old front of the warehouse are here shown being removed.

Fig. 7 (right)—Warehouse rebuilt. The new wagon-hoist—approached by a siding parallel to the main tracks—is under the canopy in the centre

BELLOW : NEW SUBWAY FROM JOHN STREET ENTRANCE

Fig. 8 (left)—Subway under construction. In background is arch supporting tracks and platforms being demolished piecemeal to permit of gradual extension of subway.

Fig. 9 (right)—Part of completed subway looking towards John Street entrance



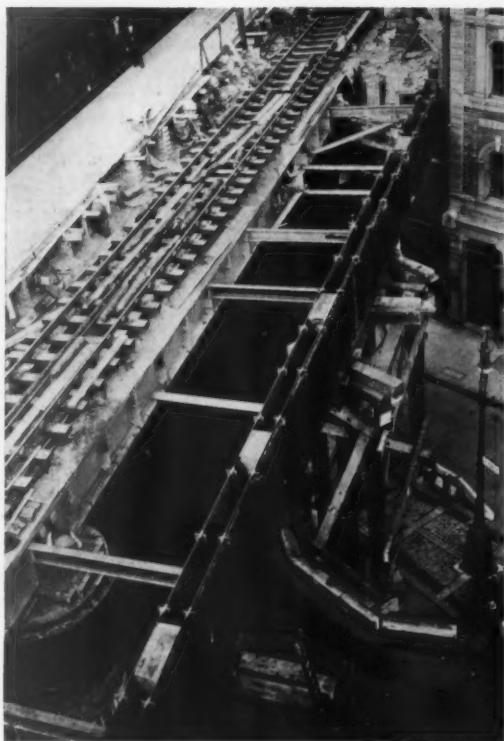
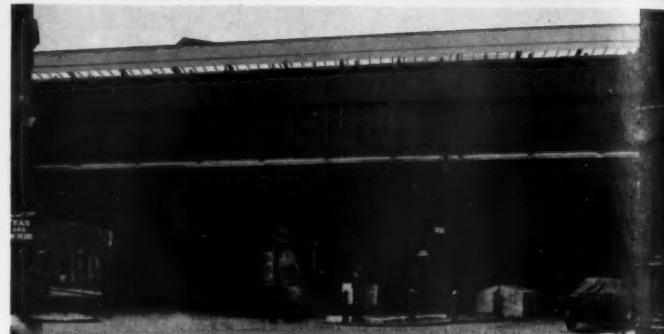


Fig. 10—Old girders of Crutched Friars bridge being removed. Note the lower half of the single-span outer girder after removal of upper half



*Fig. 11 (above)—New girder work and decking, Crutched Friars bridge
Fig. 12 (below)—Crutched Friars bridge with new girder work completed. The triangular pier and fork in roadway can also be seen*



Fig. 13—Old girders of Minories bridge being lifted on to new span (behind crane) as this is rolled into position



Fig. 14—Fenchurch Street station, L.N.E.R., before remodelling with telegraph office and bookstall occupying valuable space in the circulating area adjacent to the platforms



Fig. 15—View of the station (from the same point) after reconstruction. Note the cleared space in the circulating area and wrought-iron barrier

culous care so that the remaining arches should not be disturbed. The arch through which the subway passes was removed by cutting away the brickwork across the centre width of the span, foot by foot, and, as the brickwork was cut out, putting in its place a steel framework afterwards encased in concrete, and within which the subway was constructed. The whole of this work was carried out by the company's own engineering staff, and it can be seen in progress in Fig. 8.

The girders of the old bridgework on which the tracks were carried were, in the main, of wrought iron and designed to carry much lighter loads than are in general use today. So in most cases the old superstructures had to be replaced with modern steel bridgework designed to carry the heaviest present-day loads. The new bridgework consists generally of plate girders with cross girders and decking, in some cases formed in joists and concrete covered with asphalte and tiling; in others, where the depth of construction was limited, the cross girders were covered by steel plating, coated with asphalte and tiling to seal the floors. The bridle tiling serves to protect the layer of asphalte from being punctured by the bars and picks used by the permanent way gangs when repairing the tracks.

Moreover, the rearrangement of the lines and platforms involved complete reconstruction of the bridges over the Minories and Vine Street, as well as substantial strengthening of part of the bridges over Crutched Friars and Cooper's Row and the adjacent bonded vaults. Fig. 10 shows work in progress upon Crutched Friars bridge. As the roadway forks under the bridge there is a pier that is triangular in plan, the apex of which may be seen in Figs. 10, 11, and 12. The parapet girder, however, is too far out to rest on this apex, and therefore it had to be made to span the junction of the two streets. The old girder was 107 ft. in length, weighed over 40 tons, and was so awkwardly situated as to make it impossible to get two heavy steam locomotive cranes in position to remove and load it in one piece. It had, therefore, to be cut in small pieces suitable for handling by a light steam crane. Fig. 10 shows the girder in process of being cut down. The new girder, weighing about 54 tons, was brought to the site in three pieces and assembled on trestles placed in the street. Fig. 11 shows the new outer girder in position and also the adjoining girder resting on the apex of the pier. The concrete construction work will be noticed in this illustration. Fig. 12 shows the completed girder-work spanning the roadway and also the fork in the latter. The umbrella platform roofing is visible above the girder.

Fig. 13 gives some idea of the delicate work required at Minories bridge. The two locomotive cranes are here seen lifting out the old girders and placing them successively upon the new span—which is partly behind the nearer crane—as this new span is rolled towards the left into the place of the old. The old girders each weighed about 40 tons.

Less important from the engineering point of view are the other alterations in the station. As will be noticed from Fig. 15, the bookstall, tea room, and telegraph offices—seen in Fig. 14—have been removed, and the old fencing and gates have been replaced by an ornamental wrought iron screen, with a gate to each platform. Illuminated ornamental signs make the numbers of the platforms conspicuous, and the electric lamps hung from the

screen at each gate help in the rapid examination of tickets. In the concourse itself, book, tobacco, fruit and sweet stalls of attractive designs have been placed, and waiting rooms, lavatories, and refreshment rooms have been remodelled and enlarged. As will have been obvious from a scrutiny of Fig. 2, the platforms have been re-sited and rebuilt. The roof over the main part of the station has not been altered, except for the provision of new smoke louvres and ventilators. Beyond the main roof, light umbrella type awnings (Fig. 16) have been provided to cover the full length of each of the two double-sided platforms; the type of roofing is that having only one line of supports down the centres of the platforms which are limited in width.

Under the previous arrangements the old entrance from John Street (now closed) served two platforms only, whereas the new entrance, situated in the same building but a little further to the east, communicates by means of the subway, already referred to, with all platforms. The new entrance on the street level contains booking office, lavatory accommodation, bookstall, and tobacco kiosk, also a public telephone. An easy flight of steps—seen in



Fig. 16—The new platforms and umbrella roofing. Four entrances to the subway—two on each platform—may be seen

Fig. 9—leads to the subway proper, from which two stairways, one on each side of the subway, lead to each platform (see also Fig. 16).

The remodelling of the station was carried out under the direction of Mr. C. J. Brown, Engineer, Southern Area, L.N.E.R., to whom we are indebted for kindly supplying us with this description of the work and the excellent photographs from which our illustrations were prepared. The engineers and contractors and their respective staffs are to be congratulated upon the satisfactory completion of a work which, though not spectacular, required the most careful planning, constant watching and attention to detail, to ensure that the programme should be worked to in all its stages. The signalling, also a most important part of this intricate undertaking, will be described and illustrated subsequently.

DETEL PROTECTIVE PRODUCTS.—A new series of preparations known as Detel Products, has been evolved with a view to protecting various materials coated with them, from sea water, brine, strong and dilute acids, alkalies, alcohol, methylated spirits, petrol, paraffin and lubricating oils. Detel is intended for use as a paint to combat smoke and fumes when applied to roof trusses, girders, coach roofing, or steel sheeting, and to preserve metal bridge and sea piers or jetties from salt water. It is also prepared as a varnish for interior protective work and can be applied with a brush or spray; it forms a suitable undercoating to ordinary paints.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

To Co-ordinate Transport in Northern Ireland

TOWARDS the end of last week the text of the Road and Railway Transport Bill for the setting-up of a Road Transport Board for Northern Ireland was introduced into the Parliament there. It proposes a board of not fewer than five nor more than seven members to be appointed by the Minister of Home Affairs, including a Chairman designated by the Minister, who will also fix the term of office and determine the salaries, fees and allowances for expenses to be paid to the members. The members must be persons of wide experience in transport, industrial, commercial, agricultural or financial matters or in the conduct of private affairs and must dispose of any securities they may hold in any transport undertaking in Northern Ireland. The duty of the Board is to provide a system of transport by road, railway and other means of transport in Northern Ireland which is properly co-ordinated and gives efficient, economical and convenient transport services to the public, and to secure by rates and fares sufficient revenue to defray all the necessary charges.

Within six months of the coming into operation of the Act the board will take over road motor undertakings, passenger and goods, with the exception of the trams and buses of the Belfast Corporation; the passenger and goods road services of the Londonderry & Lough Swilly Railway Company; local carriers in Belfast and Londonderry; taxicabs; hotel 'buses; funeral undertakers; furniture removers; as well as vehicles used by firms for delivering goods they have sold or hired or for the transfer of their merchandise in the course of manufacture or for demonstration purposes. There are also exemptions for vehicles used in connection with agriculture. The penalty proposed for

contraventions of this section is a fine not exceeding one hundred pounds. To be recognised, a road transport service must have been begun before June 1, 1934.

In Part II of the Bill there are outlined at length provisions for the purchase and taking over of the undertakings, and it is stipulated that where the consideration does not exceed £5,000 that amount may be paid in cash, while beyond that transport stock will be issued in payment. Any matters which may not be agreed upon are to be referred to an arbitration tribunal of three, appointed by the Governor of Northern Ireland, and having a judge or barrister for chairman. Apart from what it takes over the Bill would give the board power to provide and own buses, coaches or other vehicles, moved by mechanical, electrical or animal power for the conveyance of passengers, luggage and merchandise. Further, it would give powers to manufacture as well as for buying, repairing and maintaining rolling stock and vehicles. There are provisions for buying and equipping garages, workshops, and so on. There is also a clause which states that it shall be the duty of the board to afford all such reasonable facilities as may be requisite for the receiving, forwarding, carrying and delivering of road traffic. Fares, rates, or conditions fixed by the board must be published before they can be brought into force.

The board and the railway companies are to co-ordinate their services so as to eliminate what is unnecessary or wasteful. To assist in these matters there is to be a joint committee of six, of which three will be appointed by the board, one by the Great Northern Railway Company (Ireland), another by the Northern Counties Committee, L.M.S.R., and the sixth by the Belfast & County Down Railway Company. This joint committee will consider proposals for co-operation between the board and the railway companies, for through bookings, inter-availability of tickets and apportionment of receipts, alterations



Two views which illustrate the railhead services organised by the G.N.R. (I.). On the left the lorry is being loaded up at Lurgan station, and on the right, deliveries are being made at a shop in the small town of Donacloney

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in services or fare, the provision of joint new services, and so on. One of the first duties of this joint committee will be to prepare a scheme for the pooling of receipts. This has to be done within six months of the passing of the Act, and if the scheme is accepted by the board and the railway companies it will be submitted to the Transport Appeal Tribunal for confirmation, while if a scheme is not drawn up in the time stipulated the Appeal Tribunal will have to prepare and settle a scheme.

Part III deals with matters of finance and the issue of stock. This would be of two designations, Northern Ireland Transport A Stock and Northern Ireland Transport B Stock. The A stock would bear interest at 4 per



Some of the buses of the Northern Counties Committee, L.M.S.R., in the Duncrue Street garage, the main depot of the fleet in Belfast

cent. per annum but the B stock is to bear interest at 4 per cent. for the first two years and then 5 per cent., with an addition when there is sufficient surplus for the purpose. For the first three years the A stock would be issued in two classes, A1 for payments in respect of profit-earning concerns and A2 for non profit-earning undertakings. The board would also be given power to establish an insurance fund and to arrange for its own insurance of fire, accident and third party risks.

Although the buses and trams of the Belfast Corporation are exempted from the Act, power would be given to the board to enter into an agreement with the Belfast Corporation for the transfer on terms of the whole or any part of the undertaking, or to work or manage the whole or part of the services. Part IV deals with a superannuation scheme for officers and also conditions of employment. Part V covers such matters as the maintenance of transferred undertakings until the days of transfer and the amount of compensation to be given to persons employed in transferred undertakings. Part VI is devoted to the constitution and work of the Appeal Tribunal, the latter including the powers and duties of the Railway and Canal Commission and those of the tribunal set up under the 1929 Motor Vehicle Act. The Ministry of Home Affairs would also refer to the Appeal Tribunal any applications from local authorities and traders and associations for revision of rates and charges and objections to the withdrawal or curtailment of facilities or representations for the provision of new or further facilities. It is stipulated that the board or any railway company shall not make or give any undue or unreasonable preference or advantage to any particular person, trade, industry, district or port, and shall not subject any of them to any undue prejudice or disadvantage. There is also a provision requiring the board and the railway companies to afford in respect of

traffic of every description carried or to be carried by sea equal fares and facilities irrespective of the ownership of the vessels.

Part VII deals with amendments of the law as to railway and canal companies and on the passing of the Act all enactments applying to any railway company and making provision with respect to fares, rates and so on or with respect to affording services and facilities will cease to apply so far as they are inconsistent with this Act. This part would also permit any two railway companies to enter into an agreement for the working of the undertaking, or part of it, of either or any other party, and it also states that it shall be lawful for railway companies to invest in Transport Stock.

Part VIII would arrange for the transfer of the powers and duties of the Ministry of Commerce in respect of railways to the Ministry of Home Affairs.

There are three schedules attached to the Bill, the first and longest setting forth provisions in accordance with which the pooling scheme is to be framed, the second relating to the temporary provisions as to Transport Stock, and the third dealing with the special powers of the Londonderry Corporation to provide bus and trolleybus services, which are at present leased to H. M. S. Catherwood Limited. On the passing of the Act these special powers will cease to have effect but separate accounts of the Londonderry undertaking, as operated by the board shall be kept and any surplus receipts divided equally between the board and the Londonderry Corporation. With regard



Some of the vehicles engaged in regular services organised by the Northern Counties Committee, L.M.S.R., in the Smithfield bus station of the Committee in Belfast

to the pooling scheme it is suggested that 1932 should be regarded as the standard year for road transport and one half of the receipts for the two years 1924 and 1932 for the railways.

It is reported that at a meeting in Belfast on Tuesday, the Ulster Farmers Union Council passed a resolution demanding the withdrawal of the Bill. It was stated that at present road transport gave farmers a full service at moderate rates, and that if railways were essential and must be subsidised, it should be done by direct grant from the Government.

On the other hand it has been announced that the negotiations for the transfer to the proposed Board of the Belfast Omnibus Company are nearing completion. This company owns about 180 vehicles. It may be recalled that in 1930 the company sold eleven of its services in the counties of Antrim and Londonderry to the Northern Counties Committee of the London Midland & Scottish Railway.

A Road Train for Overseas

Practical results obtained with the oil-engined three-vehicle train in the full scale tests under commercial conditions in the undeveloped parts of Australia

THE valuable work accomplished by the Oversea Mechanical Transport Directing Committee is amply testified to in the report, recently issued, dealing with the trials carried out in Australia with the second road train built, to the designs evolved by the Committee, for transport in undeveloped countries. It may be recalled that the first unit had a petrol-engined eight-wheeled tractor, with all wheels driven and steered, built by Leyland Motors Limited, and two eight-wheeled Dyson trailers. The train was tested over 8,000 miles on lightly-constructed roads under commercial conditions in



The road train crossing Leila Creek between Borroloola and Anthony Lagoon, in the north of the Northern Territory. Some of the river crossings have banks as steep as 1 in 4½

the Gold Coast and was subsequently bought by the Gold Coast Government.

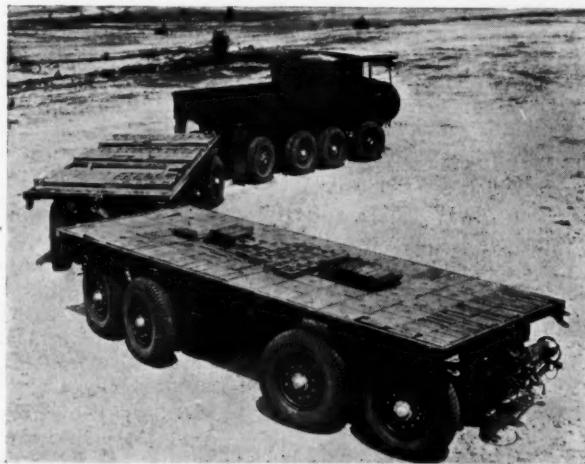
It was not found necessary to make any radical alterations in the design for the second unit, but it was decided to utilise a high speed, compression-ignition, oil engine, and the tractor was built by the Associated Equipment Co. Ltd., to the committee's specification. It was deemed unnecessary for all the wheels of the tractor to steer, and in this case only those on the first and fourth axles are steered. The weight transported remained as before, 3 tons on the tractor and 6 tons on each of the trailers, but on good surfaces without steep gradients, 4 tons may be placed on the tractor and 8 tons on each of the trailers.

This second unit was tested for about 3,000 miles in England before being shipped to Australia, where during 29 weeks the train covered 9,387 miles, the ton-mileage amounting to 81,933 with an average load of 8·72 tons. Based on those figures the cost per ton-mile is given at 3·08d., taking a full year and working 500 miles a week. For a 48-week year the figure would be 3·23d. and for a 38-week year, 3·76d. This includes depreciation, based upon a life of 100,000 miles, interest on the capital outlay at 4 per cent. and insurance, and it is based on the actual results obtained. One difficulty was that of return loads. Whilst on all the outward journeys the unit was loaded to its normal capacity of 15 tons, and sometimes

carried up to 20 tons, little return freight could be secured, consequently reducing the average load to 8·72 tons. Another factor which increased the cost per ton-mile was the large amount of time that had to be spent in loading and off-loading due to the lack of facilities, but in an organised service these times could be curtailed. It is pointed out that the ruling rate for motor transport in the Northern Territory ranges from 9d. to 1s. 6d. per ton-mile.

In a letter from the Secretary of the Department of the Interior in Australia it is pointed out that "where railways have not been constructed and where the volume of railway traffic would not be sufficient to enable ordinary railway freight rates to be profitable, the construction of cheap developmental roads, and the use of these large capacity road transport units, would defer the necessity of constructing costly non-paying railways until such time as development and production warranted their construction. In the meantime, by the use of large capacity road transport units, the district concerned could be provided with remarkably cheap and efficient transport services at relatively very much less capital cost."

The value of the results secured is also testified to in a joint report by the Deputy Administrator, Northern Territory and the Resident Engineer at Alice Springs, in the centre of the continent, where the vehicle was based for some time. There it is emphasised that "the destructive effect of the unit on the roads was comparatively negligible and certainly far less than that of the ordinary type of transport vehicles in use, which usually carry far more loading than was intended when they were designed." The wear on the Dunlop Giant tyres of the unit was found to be very slight and, with the exception of three punctures, no tyre trouble was experienced, the even distribution of the load assisting in this respect, together with the large section low pressure tyres and the articulation of the wheels. This articulation and the bogie system of



In this view the remarkable steering qualities of the road train are brought out, the trailers following faithfully in the track of the tractor

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springing were given particular attention and it was found to give very smooth running and in no case was trouble experienced through the load shifting.

It is pointed out that the true tracking of the tractor and trailers brought about by the steering on the front and rear wheels of the tractor and the turntables and connections on the trailers was an unqualified success and without them it would not have been possible to operate in the territory. The road through the MacDonnell ranges



A view of the A.E.C. oil-engined tractor unit which emphasises the flexibility of the eight-wheeled arrangement when traversing rough ground

has a number of sharp curves and grades, but the unit negotiated them many times without difficulty.

It is also stated that the progressive action of the Westinghouse braking system, whereby the brakes take up on the rearmost trailer first, then the first trailer and finally the tractor itself, thus preventing the trailers overrunning the tractor when the brakes are applied on curves and grades, and the braking on alternate wheels, preventing side slip on side slopes, call for very favourable comment.

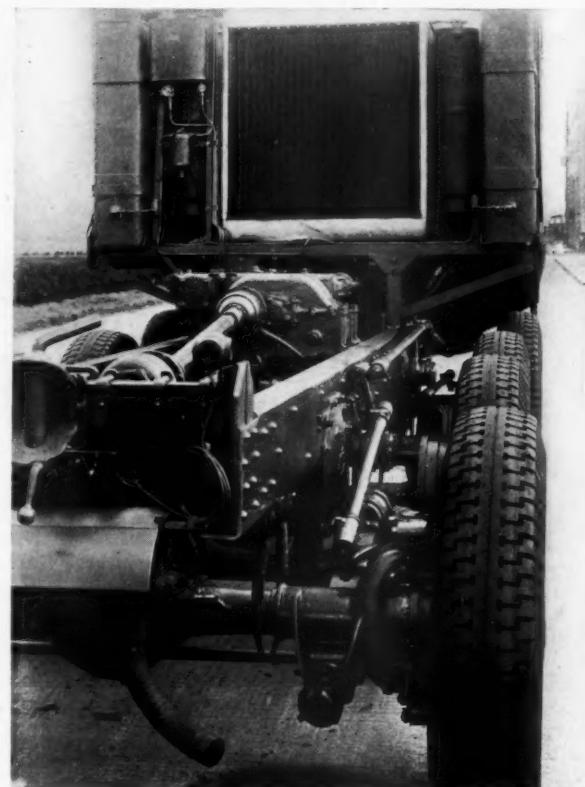
It is pointed out that in the northern part of the territory, where a heavy rainfall prevails, it is only possible to transport loading during the dry season from, say, June to October, and it is obviously an advantage to be able to carry large quantities of provisions and materials in one trip as soon as the roads are trafficable. With regard to back-loading it is remarked that while ordinary fat cattle are not sufficiently valuable to make their transport a commercial proposition, it would be possible to carry valuable stud cattle, while the treatment of the animals and the saving of time would greatly reduce the possibility of mortality in transport. Incidentally, it is stated in this report that one station effected a saving of approximately £450 by having loading transported by the unit.

With regard to the cost of fuel, it is explained that while this is 7d. a gallon in Adelaide, it is just on 1s. 2d. at Alice Springs, while at more remote places the cost goes up to 1s. 7d. a gallon. The Department of the Interior raises the question of utilising producer gas, which as a fuel for farm tractors has made considerable advance in Australia. It is suggested that this might be the means of effecting further transport economy as well as providing a small avenue for employment in the local production of charcoal from waste timber.

A description of the unit was published in THE RAILWAY GAZETTE of August 25, 1933, but it may be recalled that the power unit is the 130 b.h.p. A.E.C. six-cylinder type, and that the special Still tube radiator is mounted at the rear of the driving cab. There is a 4-speed main gearbox

as well as an auxiliary box, giving in combination six forward speeds. The overall top gear ratio is 8·25 and the bottom 83. The maximum gradient that can be climbed by the train on dry earth roads with smooth tyres and no chains and carrying a useful load of 15 tons is 1 in 8. The tractor alone, with 3 tons useful load, can negotiate a slope of 1 in 2½.

Unfortunately the finances at the disposal of the Directing Committee are practically exhausted and unless further funds are forthcoming it will not be possible to proceed with the construction of a 30-ton unit, the preliminary design for which has been prepared. In this the tractor would carry a load of 6 tons, and the two trailers 12 tons each. The motive power would consist of two 130 b.h.p. oil engines and, with a paying load of 30 tons, the cost per ton-mile could be reduced substantially below the figures attained with the present unit, while there would be no material increase in road maintenance costs above those imposed by the ordinary 3-ton lorry at present. The committee believe that with such a cheap instrument of transport it should be possible to develop new areas



A close-up view which shows the rear steering, the drive from the auxiliary gearbox, the high mounting of the radiator and other details of the tractor

at a considerable distance from rail and assist the railways themselves by enlarging the zone which they tap without the need of incurring the initial expense and risk of a branch line.

In the meantime it is satisfactory to know that an order on behalf of the Russian Government for two of the 15-ton units has been placed with the Associated Equipment Co. Ltd., while another has been ordered by the Crown Agents for the Colonies on behalf of the Government of the Tanganyika Territory.

Aiding the Bridge-Builders

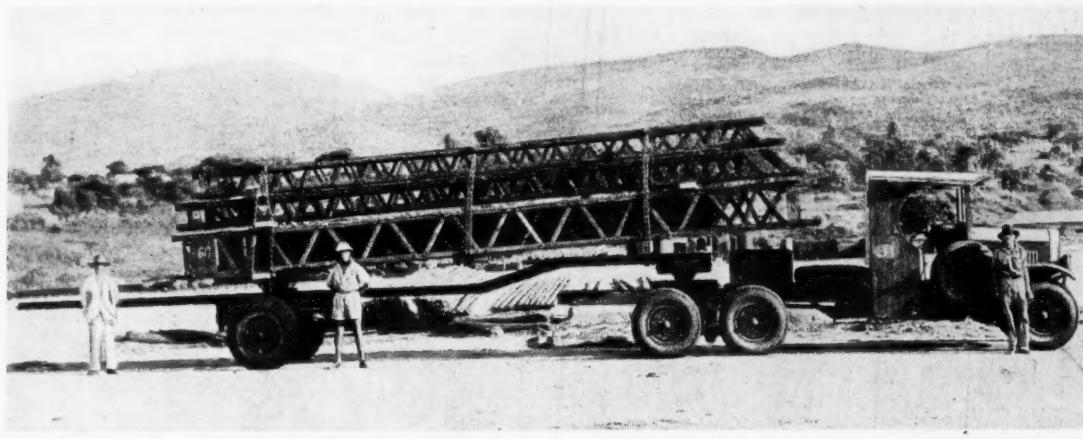
How the road motor services of the Rhodesia Railways are assisting the builders of the Birchenough Bridge, the third largest of its type in the world

In the latest issue to hand of the *Bulletin of the General Manager of the Rhodesia Railways*, there is printed a message of appreciation from the Chairman and Directors of Dorman, Long & Co. Ltd., for the successful manner in which the large quantities of steel and other material for the building of the Birchenough bridge is being transported to the site. The message adds that the nature of the road surfacing, together with the abnormal wet season extending over the period of delivery, would have justified delays, thereby causing great inconvenience to the erectors. Due to the very efficient transport organisation, these difficulties were overcome, as a result of which the job has benefited.

The road transport of the unusual loads and heavy weight represented by the sections of steelwork which, when assembled, will form the third largest bridge of its type

It was apparent from the outset that specially designed vehicles would be needed to deal with this traffic, and it was decided to modify for this purpose certain Thornycroft lorries and Carrimore trailers. Two general schemes were followed, the one to carry steelwork up to 5 tons in weight and of any length up to the maximum of 51 ft., and the other for the heavier material up to a maximum of eight tons in weight and 51 ft. in length. For the former, the 5-ton Thornycroft six-wheelers, with specially lengthened 5-ton trailers, were used, while for the latter, the 3-ton Thornycroft six-wheelers had a turntable arranged above the back axle to carry the forward end of a long two-wheeled trailer, so making an eight-wheel articulated vehicle.

Between May, 1934, when the transport for the bridge began, and March 17, 1935, the total weight of material



One of the 3-ton Thornycroft six-wheeled lorries of the Road Motor Services of the Rhodesian Railways, which has been specially converted into an articulated eight-wheeled vehicle to transport 8-ton loads of steel work for the Birchenough Bridge, now in process of construction.

in the world, constitutes a major achievement to the credit of the Transportation Department of the Rhodesia Railways. Over a distance of 80 miles, along a road containing many steep and long gradients, with all the handicaps of a sodden surface inevitable in a semi-tropical season, the specially adapted units of the Road Motor Services have done well, and the General Manager has expressed his satisfaction to the staff concerned.

Heavy steelwork began to arrive at Umtali early in December last, and since then the road vehicles have been regularly employed in conveying loads to the bridge site, which is about a mile beyond the old drift over the Changadzi River. The route follows the existing Umtali-Chipinga road for a distance of 72 miles, the remaining eight being over the old road to Chippinga. The longest gradient negotiated on the run is that from the Impudzi River bridge, extending for a distance of about one mile; the steepest part of this climb is about 1 in 8. Another heavy pull is from the Wengesi River bridge, while severe curvature and narrow roads throughout the run also produced peculiar problems, owing to the length and weight of the steelwork to be conveyed. Individual pieces reached a weight of 8 tons each, and they have varied in length up to 51 ft.

taken to the site in this way amounted to 2,683 tons, and it was conveyed without an accident of any description. At the time of writing there were still large quantities of material to be transported.

ROAD AND RAIL IN SWITZERLAND.—The Swiss Federal Parliament, after long-sustained efforts to secure agreement between the railway authorities and the road carriers, recently passed a law intended to secure effective co-operation in the transport of goods. This would have reserved traffic over 30 km. to the railways and that over lesser distances to road carriers. However, a referendum was demanded, and this was carried out on Sunday last, when the proposal was rejected by 480,000 votes to 245,000.

MOTOR ROADS IN GERMANY.—The first section of the *Reichsautobahn*, or national motor road, between Frankfurt-on-Main and Darmstadt, for the construction of which the first spade of earth was turned by Herr Hitler last December, will be completed and opened for traffic towards the end of this month. On this motor-road 65 h.p. Krupp streamline buses will be put into operation, each with a capacity for 23 passengers.

The Vulcan Range

THE series of goods vehicles built by the Vulcan Motor & Engineering Co. (1906) Ltd., of Southport, is a comprehensive one, the six types covering a load range from 30 cwt. to 6 tons pay load. Moreover, in each case it is possible to obtain them fitted with a well-known high speed oil engine. Any one of the six may have a Dorman oil engine or in the four larger models there is the alternative of an engine of the Gardner make.

There are further variations, in that the chassis may be arranged with either normal or forward control—the latter type include swinging front wings to facilitate access to the engine—and at least two wheelbases and sometimes three are offered with each model. The specifications include four-wheel brakes, assisted by De Wandre servo, on all chassis except that for loads from 30 to 45 cwt., and the equipment comprises 12-volt electric lighting set, electric horn, mechanical tyre pump, driving mirror, safety glass windscreen, suction type windscreen wiper, spare wheel and tyre, kit of tools, mascot and licence-holder. Two of the forward control chassis, those for 2 and 3 tons, can be supplied in a low-loading design.

The photograph that we reproduce illustrates the clean lines which are typical of all the chassis. This particular one is the biggest in the range, being designed for a guaranteed pay load of 6 tons. The power plant is either a petrol engine of 30 h.p. rating, giving 45 b.h.p. at 1,000 r.p.m. and 75 b.h.p. at 2,500 r.p.m. or the Dorman 4HW oil engine or the Gardner 4LW oil engine.

The transmission includes a single dry plate clutch and

a four speed gearbox supported at three points to insulate it from frame distortion. There is on the diesel-engined models an overspeed auxiliary gearbox which, with a final axle reduction of 7 to 1, gives an overall ratio of 4.66 to 1. Otherwise the overall ratios work out to 1st, 31.92; 2nd, 18.9; 3rd, 10.85 to 1; the top being direct and therefore 7 to 1. There is an alternative final drive ratio of 8 to 1. From the gearbox to the back axle the power is taken by a single tubular shaft with internal ring type universal joints, except on the long wheelbase models which have double tubular shafts with a self-aligning ball bearing supporting them at the middle.

The rear axle is of the full-floating design, with overhead worm and worm wheel reduction gear and spur differential mounted in a separate and easily detachable housing, the power being transmitted to the wheels by 70-ton nickel-chromium steel shafts. Large taper roller bearings are fitted to the wheel hubs. The brake drums are of chrome alloy, and the front brake actuating rods pass through hollow king pins, thus ensuring no interference with braking when the wheels are locked over by steering. The hand brake operates on the rear wheels only.

The track of this vehicle is 5 ft. 5 in. and the wheelbases are 12 ft. 4 in., or 14 ft. for the bonneted models and one inch shorter in each case for those with forward control. The chassis weight, less allowable deductions for licensing, is quoted at 56 cwt. for the normal control, short wheelbase petrol-engined type, with an addition of 6 cwt. in the case of the oil-engined models.



A view of the chassis of the Vulcan 6-tonner, which emphasises the strength and cleanliness of the design, as well as the accessibility of the components and accessories

"LEYLAND JOURNAL."—No. 2 of the *Leyland Journal* is fully up to the high standard of the initial issue, and it certainly appears that this periodical is in for a long and useful life. Among the more interesting articles is a brief description of a new Beaver type, with a four cylinder engine, which comes into the 4-ton tax class. Many readers will read with great interest the article by Mr. Charles A. Stafford on the way in which Leyland Titan buses with torque converters have solved traffic problems in Burnley. There is also a useful summary of decisions given by the Appeal Tribunal.

NEW B.E.N. UNITS.—The Dual air unit introduced by B.E.N. Patents Limited is proving an attractive proposition to service stations where vehicles are repainted. Primarily designed for spray painting and fast tyre inflation work, this portable compressor will handle as many as 22 complete repaints in a week as well as providing air for other services. A new paint spray gun, recently introduced by this firm, can give both a flat fan and round spray without any change of head. Besides all ordinary paints it will apply such viscous materials as bituminous paints, enamels and oxides. It is known as Model R.F.

RAILWAY NEWS SECTION

PERSONAL

SOUTH AFRICAN RAILWAYS STAFF CHANGES

Consequent upon the retirement of Mr. J. A. Harris, Assistant General Manager (Commercial) and the appointment of Col. A. Herschell, System Manager, Durban, and Mr. C. G. C. Rocher, Assistant Chief Civil Engineer,



Mr. W. J. K. Skillicorn,

Appointed Assistant General Manager (Commercial), South African Railways and Harbours

to the Railways and Harbours Service Commission—as already mentioned in these columns—several important staff changes have taken place.

Mr. W. J. K. Skillicorn, System Manager, at Capetown, has been appointed Assistant General Manager (Commercial).

Mr. W. F. Veary, Senior Staff Controller, succeeds Mr. Skillicorn as System Manager at Capetown.

Mr. W. E. Turnbull, System Manager, Johannesburg, has been transferred to Durban in a similar capacity, *vice* Col. Herschell, and he—Mr. Turnbull—will be succeeded by Mr. G. J. Viljoen, System Manager at Bloemfontein.

Mr. C. M. Hoffe, System Manager at East London, returns to headquarters in succession to Mr. Veary.

The appointments to fill the vacancies thus created at Bloemfontein and East London have not yet been announced.

Mr. J. M. Greathead, Inspecting Engineer, Johannesburg, has been promoted to the position of Assistant Chief Civil Engineer and Inspecting Engineer.

Mr. W. J. K. Skillicorn, M.Inst.T., who, as announced above, has been appointed Assistant General Manager (Commercial), South African Railways and Harbours, joined the Natal Government Railways in 1903, after serving six years on three English railways. For seven years he remained with the Natal administration, spending three years on goods and harbour work and later specialising in rates matters, he became Chief Rates Officer in 1906. At the time of Union (1910) he was transferred to headquarters at Johannesburg, and was promoted in 1913 to Principal Clerk (Rates) and to Assistant Superintendent in 1919. In the following year he was appointed Rates Assistant to the General Manager, after which he organised and introduced the grain elevator system in South Africa, having previously studied the subject in Canada and the United States of America. After ranking as Controller of Grain Traffic, Mr. Skillicorn became Divisional Superintendent at Kimberley in January, 1925, and later was in charge of the railways and harbours in South West Africa. Promotion to System Manager, Eastern Transvaal System, followed in 1929, and for the last four and a half years he has been System Manager of the Cape Western System. In addition, Mr. Skillicorn has been connected with many commissions and conferences, and was a member and Secretary of the Grain Elevator Commission in 1918; an assessor member of the first Board of Trade and Industries; and chairman of the Departmental Tariff Inquiries Committee (1930) and of other committees. He was also responsible for the main revisions of railway tariffs under the direction of Sir William Hoy between 1910-1922; and the collation of data and evidence for the Granet Commission and the South West African Economic Commission in 1933. He has been chairman of the Conciliation Board, and has held high office in the Institute of Transport and the St. John Ambulance Brigade. In early days Mr. Skillicorn was a leading member of a railwaymen's debating society in Natal, which was directly responsible for the birth of the South African Railways and Harbours Magazine in 1905. In 1918, out of more than 500 entrants, he was awarded the first prize offered by the Navy League in an essay competition.

G.W.R. DOCKS APPOINTMENT

Mr. C. S. Page, Chief Docks Manager, Great Western Railway, will retire at his own request at the end of the year. The directors have appointed Mr. W. J. Thomas, Marine

Manager, as a Deputy Chief Docks Manager, in addition to Mr. J. H. Swallow.

Mr. Stuart Ainsworth, whose appointment as Manager of the Guayaqui-La Paz Railway was announced in THE RAILWAY GAZETTE of January 11, served his apprenticeship with the Great Central Railway (England), and remained with that company for some



Mr. Stuart Ainsworth,

Appointed Manager of the Guayaqui-La Paz Railway, Bolivia (Peruvian Corporation Railways)

time after completing his training. He joined the Army in 1914, and served in Gallipoli and France until the end of the war, retiring in 1919 with the rank of Captain, R.E. In 1920, he was appointed Assistant Engineer of the Peruvian Corporation, and in 1921 was transferred to the Guayaqui-La Paz Railway in a similar capacity. In November, 1934, he was promoted to be Manager and Engineer of the Guayaqui-La Paz Railway, replacing Mr. C. V. Sampson, who had been transferred, on promotion, to Arequipa as Traffic Manager of the Southern Railways of Peru. Mr. Ainsworth is an Associate Member of the Institution of Electrical Engineers, and of the Institution of Mechanical Engineers.

Mr. M. M. Gillespie, M.I.E.E., of Gillespie & Beales (Norfolk Street, Strand), has recently been appointed to the board of J. Browett Lindley (1931) Limited, engine and compressor manufacturers, of Letchworth, Herts. For many years Mr. Gillespie was a director of Browett Lindley & Co. when the factory was situated at Patricroft, Manchester, where he was closely

Right: Southern Railway carriage advertising. Typical example of third class compartment in a coach on electrified services

(See article on page 929)

Below: Electric train with the King and Queen of the Belgians cutting the ribbon at Brussels (Nord) station on Sunday last on the occasion of the Belgian railway centenary. The Belgian railways and their history were described and illustrated in our issue of April 26, and the electrification of the Brussels-Antwerp line in our "Electric Railway Traction Supplement" of April 5



Below: Rolling stock at the Brussels exhibition. The British railways and the Travel Association have combined to present a joint exhibit in the British pavilion which is to be opened to-day (May 10) by Sir Esmond Ovey, the British Ambassador



associated with the development of gas and oil engines, and gas and air compressors. Prior to this he occupied important positions with the British Westinghouse Company, the Macintosh Cable Co. Ltd. and other leading electrical firms.

Mr. J. H. S. Dickenson, Metallurgist-in-Chief of the English Steel Corporation, whose death we announced in our issue of November 23 last, left estate valued at £6,680 (£6,211 net).

Brigadier-General C. R. Woodroffe has been elected Chairman, in addition to being appointed Managing Director, of the Pekin Syndicate Limited, in place of Major W. S. Nathan, who has resigned.

INSTITUTE OF TRANSPORT

The following corporate members and associate member have been elected, and non-corporate graduates and students have been admitted during April:—

Members

Mr. L. P. Ball, O.B.E., Assistant Divisional Superintendent of Operations, Crewe, L.M.S.R.

Mr. G. Hogg, Expenditure Accountant, South African Railways and Harbours.

Mr. James Williams, Revenue Accountant, S. African R. & H.

Associate Member

Mr. L. J. L. Lean, Assistant Manager, Bute and Penarth Docks, G.W.R.

Graduates

Messrs. R. Calverley, New Zealand Government Railways; H. T. L. Champness, H. Knight, F. A. Scrimshire, W. G. Snape, C. J. Wield and J. Winter, L.N.E.R.; W. S. Davies, G.W.R.; A. J. Hallsworth and R. Simmons, L.M.S.R.; A. R. G. Saunders, Southern Railway; F. Smith, G. H. Starkey and A. T. Young, S. African R. & H.

Students

Messrs. W. S. C. Boswell, L.P.T.B.; G. E. Noble and A. S. Parker, L.M.S.R.; S. W. Miller, E. H. Sanderson-Smith and N. J. J. van N. Sauerman, S. African R. & H.; C. E. Wild and H. W. Willis, Southern Railway.

INDIAN RAILWAY STAFF CHANGES

Rai Bahadur D. N. Batra has been appointed Deputy Chief Engineer, E.B.R., as from March 2.

Mr. J. H. Rickie has been confirmed as Deputy Chief Engineer, Burma Railways, as from March 5.

Mr. H. D. Creedy, late Officiating Deputy Agent, E.B.R., has been permitted to retire from Government service as from March 4.

Mr. E. Ingoldby has been appointed to officiate as Chief Controller, and Messrs. T. G. Creighton and L. H. Swain have been appointed to officiate as Deputy Chief Controllers of Standardisation with the Railway Board, as from April 1.

Final Ambulance Competition at Paddington

From 10.0 a.m. onwards, the shareholders' meeting room at Paddington was, on Friday, May 3, the scene of the final round of the series of G.W.R. ambulance competitions, which had been begun in February. Among the many spectators, including directors and officers of the company, medical men and ambulance workers from all parts of the system, none was more interested in the skill displayed by the competing teams than the Chairman the Rt. Hon. Sir Robert Horne, G.B.E., K.C., M.P. The adjudicators were Dr. S. McCormac of Newport (team test) and Dr. W. J. Crawford (individual work), and the tests imposed on the competitors were suitably staged, adding a touch of realism to the scene. At the subsequent presentation, Sir Robert presided and was supported by:—

Mr. J. F. Lean, Principal Assistant to the General Manager; Mr. R. Carmael, Chief Engineer; Dr. H. Cavendish Fuller, Chief Medical Officer; Lt.-Col. W. Salisbury Sharpe, late Medical Officer of the Company; Mr. H. S. B. Whitley, Divisional Engineer, Wolverhampton; Mr. Trevor Roberts, Divisional Superintendent, Newport; Mr. H. Adams Clarke, General Manager's Office; and Mr. W. G. Chapman, late Centre Secretary.

The result of the competition was announced by Miss C. A. Ault, Ambulance Centre Secretary, as under:—

First, Directors' Challenge Shield and prizes—Small Heath	204
Second, Carvell Cup and prizes—Fishguard Harbour	191½
Third, Prizes—Swindon	190
Fourth, Prizes—Newport Docks	187½
Fifth—Newport, Dock Street	
Sixth—Pontypool Road (A)	
Seventh—Liskeard	
Eighth—Pontypool Road (B)	

Sir Robert Horne, in making the presentations, said he was glad to have the opportunity of presiding at the conclusion of the competitions, in which he had taken a keen interest, although he had been able to witness only too small a part of the work of the competitors. There was no need to dilate upon the value of first-aid work, and no one could praise too much those who devoted themselves so ardently and enthusiastically to it. He was glad to learn that there were on the Great Western Railway some 10,000 members of the staff who were capable of affording skilled first aid when such assistance was needed. Continuing, Sir Robert expressed grateful thanks to Drs. McCormac and Crawford for judging the contests, and having presented the Directors' Challenge Shield and prizes to the Small Heath team and congratulated them on their success, he called upon Mrs. J. M. Carvell, the donor, to present the Carvell Cup to the runners-up, Fishguard Harbour. He then handed the Butt Bowl, to the Pontypool Road team, who had attained first place of any beginners' team in the contests. Then followed the presentation of the remaining competition prizes, and gold, silver and bronze medals and a number of special certificates for exceptionally

efficient first aid rendered during the year 1934. Particulars of the awards furnished by Dr. Cavendish Fuller, who was responsible for the selection of the recipients, disclosed some remarkable cases demonstrating the value of first aid. The three principal (medal) awards were:—

Gold Medal, William M. Grist, Striker, Westbury; Silver Medal, Frank T. Cull, Ganger, Wednesbury; Bronze Medal, Charles H. G. Hill, Goods Guard, Llanelli Docks.

The doctors were thanked for their work on the proposition of Mr. Trevor Roberts, and Dr. McCormac suitably responded on behalf of his colleague, Dr. Crawford, and himself. A number of the staff proposed a vote of thanks to the Chairman for presiding, and Sir Robert Horne's reply concluded a very pleasant function.

Institute of Transport Visit to Austria

The summer tour of the Institute of Transport will this year be to Austria, where a comprehensive programme of visits to places of technical interest has been arranged. The party will leave Victoria station on Saturday, May 18, at 4.15 p.m., and travel via Basle to Innsbruck, where it will be officially welcomed on Sunday evening by Herr Ing. E. Karner, Chief Mechanical Engineer, Austrian Federal Railways.

On the following morning a reception by the Governor of the Tyrol and Burgomaster of Salzburg has been arranged at the Hofburg. On Tuesday morning the party will visit the electric traction workshop at Innsbruck, and in the afternoon proceed to Salzburg, where it will be received after dinner by the Governor and Burgomaster of Salzburg at the Residenz. A further reception by the Governor will take place on Wednesday morning at the Gaisberg Restaurant.

On Friday the party will move on to Vienna, breaking the journey at Linz to visit the railway workshop, and on Saturday will be received by the Burgomaster of Vienna at the Town Hall. Sunday will be occupied by an all-day railcar excursion to the Semmering, and Herr Anton Schöpfer, General Manager of the Austrian Federal Railways, will join the party at lunch at the Hotel Südbahn to extend an official welcome.

During the remainder of their stay in Vienna, members will visit the municipal tramways depot on Monday, and the harbour of the Danube Steamship Company and the aerodrome at Aspern on Tuesday, before leaving on Thursday for Badgastein, where the following day will be spent, with a visit to the new Mallnitz power station at Obervellach in the afternoon. Leaving Badgastein on Saturday morning, the party will reach Victoria at 3.20 p.m. on Sunday, June 2. In addition to the visits mentioned, many pleasure excursions have been arranged throughout the tour.

May 10, 1935

New Works on the Mersey Railway

The Mersey Railway Company's scheme for the extension of the railway tunnel at Central station (low level), Liverpool, to enable six coach instead of five coach trains to be used during the peak periods, received the sanction of the Ministry of Transport at the end of April and work has now begun. The extra coach will be a third class one and the effect will be to increase the third class accommodation by approximately 40 per cent. a train. The complete scheme will involve an expenditure of nearly £25,000. Brief details of the proposals were given on page 1060 of our issue of December 28 last, and we are now able to supplement these and also to reproduce a sketch showing the new works.

The extension to the works at Liverpool will consist of twin tunnels, one 100 ft. long and the other 125 ft. long. The former extension will form part of the siding for use in the event of a train having to be taken out of

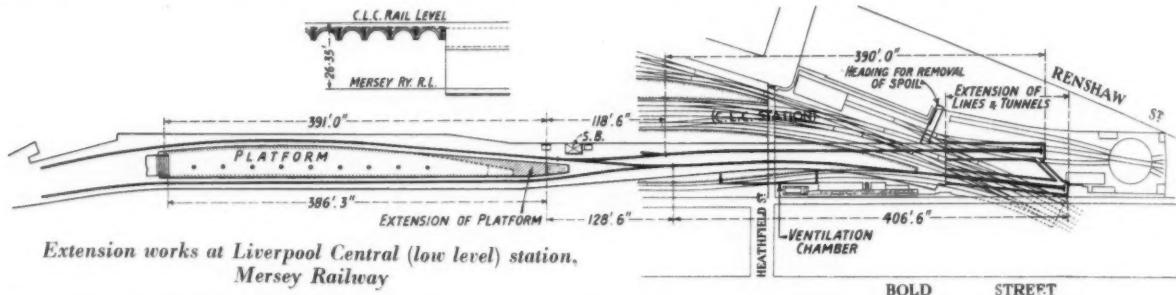
service, and the latter part of the siding will be used for shunting trains during the busy periods from the arrival to the departure platform. The extreme ends of the two short tunnels will be connected by means of a sub-way 7 ft. high by 3 ft. wide, for ventilation purposes and for emergency use by railway staff. The excavation for the tunnels will be in sandstone and the vertical walls will be unlined, the arched roof being formed of steel ribs and concrete. The back of the roof arch will be cement grouted under pressure. The spoil is being removed through the heading, shown on the accompanying drawing, which served a similar purpose when the station was built 44 years ago.

The island platform at this station will be extended by 60 ft. to accommodate the longer trains, and this will be done by extending the platform walls and filling in with rock spoil from the tunnel excavations. The surface

will be finished with non-slip flags. The only other platforms which will not at present accommodate six coach trains are those at Green Lane station, Birkenhead, and this difficulty will be overcome by building narrow platform extensions at each end in the covered way, on similar lines to those constructed at some of the stations on the Metropolitan Railway in London. The whole of the constructional works is being carried out by Sir Robert McAlpine & Sons Ltd.

New Rolling Stock

Some additional stock will be required for making up the six coach trains and the order has been placed with the Gloucester Railway Carriage & Wagon Co. Ltd. for six third class bogie coaches. These will be 60 ft. long, of the corridor type, with 68 seats. They will be equipped with Timken roller bearings. The provision of longer trains with increased third class accommodation should obviate any congestion and provide for future expansion of traffic.



Extension works at Liverpool Central (low level) station,
Mersey Railway

Exhibition of Welding

The Science Museum, South Kensington, had the unusual experience on May 1 of being the scene of a conversazione. This was held by the Iron and Steel Institute, in conjunction with leading scientific and technical societies, to open an Exhibition of Welding which is being housed in the museum from May 1 to May 15 inclusive, in connection with the Symposium on the Welding of Iron and Steel which was delivered in the Great Hall of the Institution of Civil Engineers on May 2 and 3.

Sir Harold Carpenter, F.R.S., President of the Symposium and President of the Iron and Steel Institute, received the guests and then in a short speech declared the exhibition open.

The many applications of welding in modern industry and the different methods of carrying out the work are illustrated by the exhibits, but naturally the heavier side of engineering cannot be well represented owing to the limited show space available. This however is partially remedied by a series of films which are on show between 4 and 5 p.m. each day during the exhibition. The arc welding of worn railway crossings is shown and the improved running obtained is well

illustrated by close-ups of a train passing a crossing before and after the new material has been added. Another film shows the application of arc welding in several branches of industry, including locomotive boiler work, railway coach underframes and the building of railway station platform roofs. A very interesting film gives scenes during the construction and erection of the Traneberg and Palsund bridges in Sweden, the neatness of the welded connections being clearly illustrated. Other scenes show a 12 ft. 6 in. diameter pipe line, oxy-acetylene welding in aircraft construction, and industrial applications of oxygen cutting. The last named demonstrates the extraordinary speed which can be obtained by the method, the best example being the cutting of steel 13½ in. thick, giving a surface which is remarkably smooth.

Among the numerous exhibits are several of special interest to the railway engineer, such as a rail joint welded by the oxy-acetylene method, two Framwel axleboxes by G. H. Sheffield & Co. (Engineers) Ltd., and an air brake reservoir with a working pressure of 100 lb. per sq. in. and a test pressure of 250 lb. per sq. in. There are many miscellaneous examples of construction details, such

as tubes, bars, wheel rims, &c., automatically flash welded, pressure vessels and pipe joints made by the electric arc, oxy-acetylene or atomic hydrogen methods, a tubular bus seat frame, milk churns, aeroplane parts and motorcar engine and chassis details, besides many small and even household utensils. Probably the smallest article on view is a silver medal ring, manufactured by the Royal Mint for attaching the Jubilee Medal to its ribbon.

Various processes are illustrated by demonstrations, including oxy-acetylene, atomic hydrogen, spot and automatic flash welding, and also oxy-acetylene cutting. Test pieces and photographs of important fabrications complete the exhibits.

It is unfortunate, however, that many of the objects on view have no number attached, so that reference cannot be made to the catalogue, and also two consecutive numbers are not always near one another.

The conversazione was well attended, not only by British engineers, but also by many representatives from abroad who were attending the symposium. Refreshments and the attendance of the string band of the Honourable Artillery Company served to round off a pleasant evening.

RAILWAY AND OTHER REPORTS

Antofagasta (Chili) & Bolivia Railway.—The directors announce that the net revenue for the year 1934 was approximately £465,000. After deducting £230,447 for interest on the debenture stocks, £33,191 for differences in exchange, and £47,608 amount provided in connection with the lease of the Aguas Blancas Railway Company, there remains an amount of about £154,000 (against £103,940) to be added to the balance of £240,693 brought forward from the year 1933. It is proposed to transfer £261,000 (against £70,000) to exchange reserve account and to carry forward approximately £134,000. The directors regret that owing to the large currency balances accumulated abroad and particularly in Bolivia, the uncertainty as to when it will be possible to remit the same and at what rates of exchange, they are unable to recommend a payment on account of the arrears of dividend on the 5 per cent. cumulative preference stock. These arrears date from January 1, 1932.

City of Oxford Motor Services Limited.—For the year 1934 this company, which is jointly controlled by the Great Western Railway Company and the British Electric Traction Co. Ltd., had a profit, after writing off depreciation on rolling stock, plant, furniture, &c., of £44,831, compared with £32,587 for 1933. After deducting therefrom debenture interest, amount transferred to sinking fund for redemption of debentures, £10,000 transferred to reserve, and other items, there remains a balance of £19,360 (against £22,366). After adding £5,224 brought forward, there is a total of £24,585, of which £4,810 is applied to preference dividend, and £14,175 to a dividend of 10 per cent. (the same) on the ordinary shares, leaving £5,600 to be carried forward. With the exception of £200 all the debentures were redeemed as at December 31, 1934.

Birmingham & Midland Motor Omnibus Co. Ltd.—This company, which is jointly controlled by the London Midland & Scottish and the Great Western Railway Companies and by the British Electric Traction Co. Ltd., had, in 1934, net traffic and other receipts of £554,875, and received £22,140 in interest and dividends, making a total of £577,015, against £520,637. After deducting administration and general expenses, &c., and adding £51,756 brought forward, there is a balance of £300,474 (against £264,755), out of which it is proposed to apply £72,216 to reserve, £10,000 to employees' assistance fund, £8,000 to dividend of 8 per cent. for the year on the cumulative preference shares, £100,000 to dividend of 10 per cent. for the year on the ordinary shares, and £50,000 to bonus of 5 per cent. on the ordinary shares, carrying forward £60,258. The dividend and bonus are the same as for the previous year, but

the allocations to reserve and to employees' assistance fund are considerably increased. A number of competitive omnibus businesses was acquired during the year.

Erie Railroad.—A net operating income for 1934 of \$12,699,832 showed an increase of \$176,685 on 1933, but after crediting non-operating income and deducting interest and other charges a net loss on the year of \$601,034 was recorded, compared with a profit of \$531,528 in the previous year. Current assets are \$18,191,473, against current liabilities of \$23,439,258.

A. Reyrolle & Co.—After adding £112,855 brought forward from last year to the profits on 1934 of £103,303, there was £216,815 available for distribution. Profits in 1933 amounted to £98,644 and no provision was made for developments expenditure, but this year a sum of £20,000 has been set aside for that purpose. The directors propose to maintain the dividend on the

ordinary shares at 12½ per cent., which will leave £115,858 to be carried forward. Expenditure on capital account was £52,738, of which £24,684 in connection with testing plant was charged to development expenditure account.

Hoffmann Manufacturing Co. Ltd.—Profit for the year 1934, after providing for depreciation, maintenance and other charges, increased by £10,931 to £100,794. A balance of £50,529 was brought forward, compared with £49,926, and after deducting £14,850 for debenture interest and income tax, £37,500 for the 7½ per cent. cumulative preference dividend, and transferring £10,000 to general reserve, a balance of £88,972 remained, as against £64,591 in 1933. The directors recommended that a dividend of 10 per cent., less income tax, be paid on the ordinary shares, and that £69,597, compared with £50,529, be carried forward. At the annual general meeting the chairman said that demand for the company's products had reached a new high level in 1934, although prices remained low and the results had been made possible only by rigorous attention to economy.

RAILWAY AND OTHER MEETINGS

SAN PAULO (BRAZILIAN) RAILWAY CO. LTD.

The ordinary general meeting of the San Paulo (Brazilian) Railway Co. Ltd. was held at Southern House, E.C., on May 7, Mr. Oliver R. H. Bury, M.Inst.C.E. (Chairman of the company), presiding. The Secretary (Mr. Vernon Hinde) read the notice convening the meeting.

In moving the adoption of the report and accounts, the Chairman said that the outstanding event in Brazil during 1934 was the promulgation of the new constitution by the Constituent Assembly of Representative States on July 16, whereby Dr. Getulio Vargas was elected President. Although currency receipts had been well maintained during the year, the exchange had depreciated further, and the company had also been obliged to provide for loss on remittances made through the unofficial market. Receipts of the combined system were 100,675 contos, compared with close on 94,000 contos in 1933, and at the official rate of exchange these represented £1,636,000, as against £1,578,000. Working expenses increased by 7,300 contos to 76,000 contos, this figure including 3,867 contos to provide for the loss on remittances already referred to. In 1933, however, the company had benefited by a special credit of 2,100 contos in respect of a reserve for taxes not required. The board recommended a dividend of 2½ per cent. less income tax on the preference stock, making with the interim dividend 5 per cent. for the year. A dividend of 2½ per cent. free of income tax was recommended on the ordinary stock.

Arrangements had been made with a commission appointed by the Government for dealing with the arrears of remittances accumulated since 1933. In future, and subject to the control of the Bank of Brazil, the company would derive its exchange from exports released for financing other than government requirements, the present rate of which was lower than the average of its remittances in 1934. The new tariffs had also been approved, and came into force at the beginning of 1935.

Dealing with working results, the Chairman said that passenger receipts were up, this traffic having been stimulated by better and more frequent services, including the operation of a diesel-electric train as from July 1 last. An outstanding feature of the goods tonnage was the increase in cotton from 27,000 to 103,000 tons. Benefit had been derived from the repeal under the new constitution of the State transport tax on goods and passengers. It was hoped that the similar Federal taxes would also be removed.

As to the current year, movement in coffee was lower, but this might be compensated by the cotton traffic. The company was still obliged to buy native coal to the extent of 10 per cent. of that imported from Wales, and as this fuel was unusable in its locomotives, a heavy burden on costs resulted. Application had been made for a further revision of tariffs owing to the falling exchange. The company would press for this to be allowed not later than January 1 next.

The report and accounts were unanimously adopted.

May 10, 1935

NOTES AND NEWS

Southern Railway Bill.—This Bill was to have come on Tuesday, May 7, before the Select Committee of the House of Commons, of which Sir Henry Cautley is chairman. With the withdrawal of all petitions, however, the Bill became unopposed, and has now been referred to the Committee on Unopposed Bills.

Another Buenos Aires Underground.—It is stated that work has begun on a fourth underground railway in the Argentine capital. This new line is being projected by the Spanish company which owns the Retiro-Constitucion subway, and connects the districts of Palermo, Belgrano, and Saavedra. The ultimate length is to be seven miles, and the estimated cost is 65,000,000 pesos.

Derelict Stations as Camps.—In last week's issue we referred to the transformation of the now disused station on the Fort Augustus line for use as camping quarters for hikers. The line concerned is the branch leaving the West Highland Section of the L.N.E.R. at Spean Bridge and following a northward direction to Fort Augustus, on Loch Ness. By an error the initials L.M.S.R. were printed instead of L.N.E.R. in our previous notice.

Road Accidents.—The Ministry of Transport return for the week ended May 4 of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding week of last year:—

	Killed, including deaths resulting from previous accidents	Injured
England...	... 97 (108)	3,457 (3,938)
Wales ...	... 4 (7)	155 (176)
Scotland...	... 11 (9)	387 (397)
	112 (124)	3,999 (4,511)

The total fatalities for the previous week were 126, as compared with 126 for the corresponding period of last year.

G.W.R. Ambulance Presentation at Worcester.—A large and enthusiastic gathering assembled at the Guildhall, Worcester, on the evening of April 10, when Mr. J. F. Lean, Principal Assistant to the General Manager, distributed awards and medals to members of ambulance classes in the Worcester Division. Mr. R. J. Armstrong (Divisional Locomotive Superintendent) presided, and was supported by Messrs. H. J. Peacock (Divisional Superintendent), E. W. Mauger (District Goods Manager), W. E. Walling (Sheet Stores Superintendent), A. Snell (Assistant Locomotive Superintendent), and W. J. Waite (Divisional Ambulance Secretary). Mr. Lean, in distributing the large number of long-service efficiency medals, said that the company was extremely proud of its gold medallists, who were the real founders of the Great Western Railway Centre. The Kilbourne Kay Shield and Kilbourne Kay Cup,

advanced and beginners' competition trophies, were presented to the Kidderminster and Evesham teams respectively, together with Directors' prizes.

Report on Economic Reform Programmes.—The first interim report of the Engineers' Study Group, on schemes and proposals for economic and social reforms, will be presented at a meeting of the British Science Guild on Thursday, May 16, at 5.30 p.m., in the lecture theatre of the Institution of Civil Engineers, Great George Street, Westminster. The report will be presented in brief by Lt.-Col. J. V. Delahaye, D.S.O., M.C., and will be followed by a discussion.

Agreed Charges.—Twenty-one more applications for the approval of agreed charges under the provisions of section 37 of the Road and Rail Traffic Act, 1933, have been lodged with the Railway Rates Tribunal, as will be seen from the legal notice published on page 950. These applications may be inspected at the office of the tribunal, 2, Clement's Inn, Strand, W.C.2, at the Railway Clearing House, London, and at 11 named centres outside London. A copy of each application (1s. post free) may be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street. Notices of objection must be filed with the Registrar on or before May 24.

Norwegian Coastal Communications.—In order to link the important Norwegian coastal town of Haugesund more directly with Oslo, it is proposed, according to Reuters, to establish a motorship service between Haugesund and Bergen, connecting there with the Bergen-Oslo Railway. The vessel would be driven by twin diesel engines developing 4,500 i.h.p., and would be capable of about 16 knots. On the promenade deck 20 single and 10 two-berth cabins would be arranged for first class passengers, with 15 two-berth cabins aft for second class passengers. The cost of the vessel is estimated at roughly £95,000. This proposal is connected with a scheme for a railway between Haugesund and Odda, an important manufacturing centre on the southernmost arm of the Hardangerfjord, which is estimated to cost £800,000.

Banquet to Col. R. E. B. Crompton.—Further particulars regarding the banquet—referred to on page 400 in our issue of March 1—which is being held on May 31 to celebrate Colonel Crompton's attaining the age of 90, are as follows: The banquet will be held at the Savoy Hotel at 7.30 for 8 p.m. The chair will be taken by The Hon. Sir Arthur Stanley, G.B.E., C.B., M.V.O., and Sir James Swinburn, Bart., will present to Col. Crompton the portrait of himself painted for the occasion by Mr. George Harcourt, R.A. Col. Crompton proposes during the

evening to ask the President of the Institution of Electrical Engineers to accept the portrait as a gift on behalf of the Council. As the portrait will be hanging in this year's Academy, a photograph will take its place at the banquet. The invitations for the banquet are being issued by:—

Sir Frederick Gowland Hopkins, M.A., D.Sc. (President of the Royal Society), Sir Richard Redmayne, K.C.B., Col. A. E. Davidson, D.S.O., A.D.C., Prof. William Mandell Thornton, O.B.E., D.Sc., D.Eng., Mr. L. H. Pomroy (Presidents of the Institutions of Civil, Mechanical, Electrical, and Automobile Engineers respectively), and Prof. Dr. A. F. Enstrom (President of the International Electro-Technical Commission).

Grand Trunk Junior Stocks.—The Hon. Seymour F. Ormsby Gore, presiding at the 11th annual ordinary meeting of Grand Trunk Junior Stocks Limited on April 29, explained that the petition by Mr. Lovibond, a member of the company holding all four classes of the junior stocks, for special leave to appeal to the Judicial Committee of the Privy Council, had been granted on March 22. The appeal was to decide whether their case in Canada was bound to be heard by the Canadian Courts on the merits of the case itself.

London Transport Bill.—This Bill, including the later financial provisions allowed by the Standing Orders Committee, came on May 7 before a Select Committee of the House of Commons. Its principal purposes were fully described on pages 768 and 769 of THE RAILWAY GAZETTE for November 9, 1934. Mr. Frank Pick, giving evidence on May 8, said that the total estimated cost of the proposed works was £9,596,000 made up as follows:—

Met. & Bakerloo Lines improvement scheme including West End connection	5,925,000
Circle Line: Alterations at Baker Street, Cromwell Curve, and South Kensington	860,000
Upminster Line: Works at Aldgate East, etc., to increase capacity	1,350,000
King's Cross Station reconstruction	523,000
Monument Station: new subways	48,000
Conversion of tramways to trolley-bus working	890,000
	£9,596,000

The Metropolitan Line was not being used to its full capacity, and it was desirable to introduce a regular interval service on which passengers could rely without consulting time tables. The board asked for additional borrowing powers of £10,000,000 in view of the above programme and of the trolley-bus conversion scheme sanctioned in 1934 estimated to cost roundly £11,350,000. It reckoned to raise the money at rather less than 4 per cent. The committee adjourned until next Tuesday.

Railways Valuation for Rating.—In the House of Commons on May 2, Captain Strickland asked the Minister of Health what would be the effect on local government authorities concerned occasioned by the decision of the railway assessment authority that the L.N.E.R.

hereditaments had no value; whether that decision would affect general Exchequer contributions on account of loss of rates; and, if so, by what amount. Sir Hilton Young replied that the effect of this decision, if maintained, would be the loss to local authorities having hereditaments of the company in their area of the rates on such hereditaments. It would not affect the total of the general Exchequer contribution, which was settled by the Local Government Act, 1929, but would necessitate readjustments between local authorities of their shares in that contribution.

Forthcoming Events

May 11 (*Sat.*).—L.M.S.R. (London) Amateur Dramatic Society, at Cripplegate Inst. Theatre, 8 p.m., "Road House."

Permanent Way Institution (Manchester-Liverpool), at Birkenhead, 3 p.m., "Recent Experiments in Permanent Way Practice," by Mr. W. Hepworth.

May 13 (*Mon.*).—Permanent Way Institution (London), at Waterloo Station (S.R.),

7 p.m. "Measured Shovel Packing," by Mr. G. F. Kent.
Permanent Way Institution (Brighton), at Lecture Room, New England Street, 7 p.m. "Sling Chains and Ropes," by Mr. Garnett.

May 14 (*Tues.*).—Retired Railway Officers' Society, at Abercorn Rooms, Liverpool Street, London, E.C.2, 2.30 p.m. Ordinary Meeting.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. Annual General Meeting.

Permanent Way Institution (Sheffield), at Royal Victoria Hotel, 7 p.m. Short Paper Night.

May 16 (*Thurs.*).—Institution of Electrical Engineers, Savoy Place, London, W.C.2, 6 p.m. Annual General Meeting, Corporate Members and Associates only.

British Science Guild, in the Lecture Theatre of the Institution of Civil Engineers, Great George Street, Westminster, at 5.30 p.m. The First Interim Report of the Engineers' Study Group, presented in brief by Lt.-Col. J. V. Delahaye, D.S.O., M.C.

Royal Society of Arts, in the Lecture Hall, John Street, Adelphi, London, W.C.2, at 8 p.m. "The Evolution of the Industrial System in the Far East," by Prof. Aldred F. Barker, M.Sc., F.T.I., of Chiao-Tung University, Shanghai.

May 17 (*Fri.*).—Past and Present Crewe Pupils and Premiums, at Trocadero Restaurant, Shaftesbury Avenue, London, W.1. Annual Dinner.

British and Irish Railways Stocks and Shares

Stocks	Highest 1934	Lowest 1934	Prices	
			May 8, 1935	Rise/ Fall
G.W.R.				
Cons. Ord. ...	66 ¹ ₂	48 ¹ ₂	50	-
5% Con. Prefce. ...	118	109	118	+ ¹ ₂
5% Red. Pref.(1950)	115	107	111 ¹ ₂	-
4% Deb. ...	117	105	113	-
4 ¹ % Deb. ...	119	109	115 ¹ ₂	-
4 ¹ % Deb. ...	129 ¹ ₂	115 ¹ ₂	125 ¹ ₂	+1
5% Deb. ...	135	126 ¹ ₂	136 ¹ ₂	-
2 ¹ % Deb. ...	75	64	78	-
5% Rt. Charge ...	134 ⁷ ₁₆	123 ¹ ₄	130 ¹ ₂	-
5% Cons. Guar. ...	132 ³ ₄	121 ³ ₄	128 ¹ ₂	+ ¹ ₂
L.M.S.R.				
Ord. ...	30 ¹ ₂	19 ¹ ₂	20	-
4% Prefce. (1923)	64 ¹ ₄	41	53 ¹ ₂	+2
4% Prefce. ...	87	69 ¹ ₂	82	-
5% Red. Pref.(1955)	107	92 ¹ ₂	101 ¹ ₂	-
4% Deb. ...	114 ¹ ₈	100 ¹ ₂	109	+2
5% Red. Deb.(1952)	118 ¹¹ ₁₆	111 ¹ ₄	114 ¹ ₂ *	-
4% Guar. ...	106 ¹ ₂	96 ⁵ ₄	103	+1
L.N.E.R.				
5% Pref. Ord. ...	24 ⁵ ₄	13 ¹ ₂	13 ¹ ₄	- ¹ ₄
Def. Ord. ...	11 ¹ ₂	6 ⁷ ₈	6 ⁵ ₈	- ¹ ₄
4% First Prefce. ...	76	59 ¹ ₂	62 ¹ ₂	+ ¹ ₂
4% Second Prefce. ...	47	25 ¹ ₂	25 ¹ ₂	-
5% Red. Pref.(1955)	94 ¹ ₂	80	81 ¹ ₂	-
4% First Guar. ...	104	92	100 ¹ ₂	+ ¹ ₂
4% Second Guar. ...	97 ⁷ ₈	86 ¹ ₂	93	+1
3% Deb. ...	90	74 ¹ ₂	83 ¹ ₂	+ ² ₁
4% Deb. ...	114	99 ¹ ₄	106	+1
5% Red. Deb.(1947)	117	108	112 ¹ ₂	-
4 ¹ % Sinking Fund Red. Deb.	111 ¹ ₄	105 ¹ ₄	110 ¹ ₂	-
SOUTHERN				
Pref. Ord. ...	90	63 ¹ ₈	87	+1
Def. Ord. ...	32 ⁶ ₈	19	25	-
5% Prefce. ...	118 ¹ ₆	107 ¹ ₂	118	+ ¹ ₂
5% Red. Pref.(1964)	115 ² ₄	107 ¹ ₂	114 ¹ ₂	-
5% Guar. Prefce. ...	132	120 ² ₄	128	-
5% Red. Guar. Pref. (1957)	119 ² ₂	113	117 ¹ ₂	-
4% Deb. ...	116 ¹ ₂	103 ¹ ₄	113	+ ¹ ₂
5% Deb. ...	134	124 ¹ ₃ ₁₆	135 ¹ ₂	-
4% Red. Deb. 1962-67	113 ¹ ₁₆	105 ⁹ ₁₆	111 ¹ ₂	-
BELFAST & C.D.				
Ord. ...	6	5	5	-
FORTH BRIDGE				
4% Deb. ...	110	100	109 ¹ ₂	-
4% Guar. ...	110	100	108 ¹ ₂	-
G. NORTHERN (IRELAND)				
Ord. ...	9 ³ ₄	41 ⁶ ₁₆	9	-
G. SOUTHERN (IRELAND)				
Ord. ...	25	121 ² ₂	25	-
Prefce. ...	21 ¹ ₂	131 ⁶ ₁₆	25 ¹ ₂	- ³ ₄
Guar. ...	48	39	58 ¹ ₂	+ ¹ ₂
Deb. ...	67	59	73	- ¹ ₄
L.P.T.B.				
4 ¹ % "A" ...	126	115	123 ¹ ₂	+1
5% "A" ...	135 ¹ ₂	124 ¹ ₂	133 ¹ ₂	+1
4 ¹ % "T.F.A." ...	113 ¹ ₂	107 ¹ ₂	112	-
5% "B" ...	131 ⁸ ₄	118	127 ¹ ₂	-
5% "C" ...	97	73	100	-
MERSEY				
Ord. ...	15 ¹ ₄	7	12	-
4% Perp. Deb. ...	93 ¹ ₂	82 ¹ ₂	95 ¹ ₂	-
3% Perp. Deb. ...	66 ¹ ₂	61 ¹ ₂	69 ¹ ₂	-
3% Perp. Prefce. ...	54	44 ¹ ₂	52 ¹ ₂	-

* 44th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes

* ex dividend

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.
Road and Rail Traffic Act, 1933.
Agreed Charges.

NOTICE IS HEREBY GIVEN that applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal. The said Applications may be inspected at the Office of the Tribunal, 2, Clement's Inn, Strand, London, W.C.2, at any time during office hours and at the following places:—
LONDON: Railway Clearing House, 123, Seymour Street, N.W.1.
BIRMINGHAM: District Goods Manager's Office, Snow Hill, Great Western Railway.
CARDIFF: Divisional Superintendent's Office, Great Western Railway.
EXETER: Western Divisional Superintendent's Office, Southern Railway.
LEEDS: District Goods Manager's Office, Wellington Street, London & North Eastern Railway.
LEICESTER: District Goods and Passenger Man-

ager's Office, London Midland & Scottish Railway.

MANCHESTER: District Goods Manager's Office, Hunt's Bank, London Midland & Scottish Railway.

SOUTHAMPTON: Southern Divisional Superintendent's Office, Southampton West, Southern Railway.

YORK: Goods Manager's Office, London & North Eastern Railway.

ABERDEEN: District Goods and Passenger Manager's Office, London Midland & Scottish Railway.

EDINBURGH: District Goods and Passenger Manager's Office, Waverley Station, London & North Eastern Railway.

GLASGOW: Commercial Manager's Office, Central Station, London Midland & Scottish Railway.

A copy of each Application lodged with the Tribunal can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s., post free.

Notices of objection by any parties entitled to object to the approval of any of the said Agreed Charges must state concisely the

grounds of objection and must be filed at the office of the Registrar, 2, Clement's Inn, Strand, London, W.C.2, on or before the 24th day of May, 1935, and a copy thereof on or before the same day served on or sent by registered post to Mr. G. Cole Deacon, at the above address. A separate Notice must be filed and served in respect of each Application.

Each Notice filed must be on foolscap size paper and must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post for filing each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar, when a stamp will be affixed at the office. A Notice by a Representative Body of Traders must contain a statement of the facts upon which such Body claims to represent a substantial number of traders interested in, or likely to be affected by the decision on, the application.

Four additional copies of each Notice must be lodged with the original at the office of the Registrar.

T. J. D. ATKINSON,
Registrar.

2nd May, 1935.

Number of Application and Date of Lodgment	Parties to Agreement	Nature of Agreed Charge
1935. No. 132— April 8, 1935	COOP & CO. LTD., Wigan, and the L. & N.E. and L.M. & S. Railway Companies	Per package. Clothing.
1935. No. 134— May 1, 1935	M. & G. JACKSON, 21, Shambles Street, Barnsley, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos., and L.P.T.B. This application, by leave granted under Rule 4, relates also to an Agreed Charge with another Registered Bacon Curer in Great Britain as specified therein.	Per pig. Live Pigs consigned to Registered Bacon Curers or their Agents
1935. No. 135— May 1, 1935	THE CO-OPERATIVE WHOLESALE SOCIETY LIMITED, 1 Balloon Street, Manchester, and the Cheshire Lines Committee.	Per ton.
1935. No. 136— May 1, 1935	Do.	Grease, Glycerine and Oils (not dangerous), except when conveyed in Owner's Tank Wagons; Candles and Tapers; Boiler Composition; Druggists' or Hairdressers' Sundries; Soap and other cleansing substances; Gifts; Advertising Matter.
1935. No. 137— May 1, 1935	Do.	Do.
1935. No. 138— May 1, 1935	NEWTON MILL LIMITED, 7, Paternoster Square, London, E.C.4, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton.
1935. No. 139— May 1, 1935	THE SCOTTISH OILS LIMITED, 53, Bothwell Street, Glasgow, C.2, and the L. & N.E. Railway Co.	Stationery and Paper.
1935. No. 140— May 1, 1935	Applicable also to traffic consigned by eight Associated or Subsidiary Companies. WM. SINCLAIR & SONS (STATIONERS) LTD., Albert Works, Otley, Yorks, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton.
1935. No. 141— May 1, 1935	ANGUS WATSON & CO. LTD., Southall, Middlesex, and the L. & N.E. Railway Co.	Stationery and Paper.
1935. No. 142— May 1, 1935	H. S. WHITESIDE & CO., LTD., 10, Parkhouse Street, Camberwell, London, S.E.5, and the G.W., L.M. & S., L. & N.E. and Southern Railway Cos.	Per ton.
1935. No. 143— May 1, 1935	JOHN BARRAN & SONS, LTD., Chorley Lane, Leeds, and the L. & N.E. and L.M. & S. Railway Cos.	Groceries, Preserves and Provisions such as those included in Exceptional Rate Lists G, H, S & T, as defined in the General Classification of Merchandise; Stationery, Show Cards and Gifts for advertisement.
1935. No. 144— May 1, 1935	THE BROOK MANUFACTURING CO. (NORTHAMPTON) LTD., Clarke Road, Northampton, and the L.M. & S. Railway Co.	Per package.
1935. No. 145— May 1, 1935	WM. COLLINS, SONS & CO. LTD., 144, Cathedral Street, Glasgow, C.4, and the L. & N.E. and L.M. & S. Railway Cos.	Ladies' and Children's Clothing.
1935. No. 146— May 1, 1935	FLEMING, REID & CO. LTD., Greenock, and the L. & N.E. and L.M. & S. Railway Cos.	Per package.
1935. No. 147— May 1, 1935	A. GOLDENFELD & CO. LTD., 101, High Street, Whitechapel, London, E.1, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Artificial Silk Goods, Hosiery, Woollen Goods and Yarn, Knitting Pins, Mushroom Darners, Rug Gauges and Advertising Matter.
1935. No. 148— May 1, 1935	GRAINGER & SMITH LIMITED, Dudley, and the Cheshire Lines Committee, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per package.
1935. No. 149— May 1, 1935	Applicable also to traffic consigned by four Associated or Subsidiary Companies. C. R. MURTHIE & CO. LTD., Market Street, Edinburgh, and the L. & N.E. and L.M. & S. Railway Cos.	Boots, Shoes, Electric Lamp Bulbs, Haberdashery and Textiles.
1935. No. 150— May 1, 1935	P. H. TONKIN LIMITED, 21/23, King Street, Truro, Cornwall, and the G.W. and Southern Railway Cos.	Per package.
1935. No. 151— May 1, 1935	UNITED DAIRIES LIMITED, 31, St. Petersburgh Place, London, W.C.2, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos., and the Somerset and Dorset Joint Committee.	Clothing, Woollens, Linings, Drapery and Outfitting.
1935. No. 152— May 1, 1935	Applicable also to traffic consigned by six Associated or Subsidiary Companies. WILLIAM VEAL, 8, Beachfield Avenue, Newquay, Cornwall, and the G.W. Railway Co.	Per package.
1935. No. 153— May 1, 1935	THE WITNEY BLANKET CO. LTD., Buttercross Works, Witney, and the G.W. Railway Co.	Hosiery.
		Per ton.
		Rabbits (dead).
		Per package.
		Clothing, Drapery and General Stores Wares.

South Indian Railway Company Limited

THE Directors are prepared to receive Tenders for the supply of:—

STEEL AXLES.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders addressed to the Chairman and Directors of the South Indian Railway Co. Ltd. marked "Tender for Steel Axles," with the name of the firm tendering, must be left with the undersigned not later than 12 noon on Friday, the 24th May, 1935.

The Directors do not bind themselves to accept the lowest or any tender.

A charge, which will not be returned, will be made of 3s. for each copy of the Specification.

Copies of the drawings may be obtained from the Company's Consulting Engineers, Messrs. Robert White & Partners, 3, Victoria Street, Westminster, S.W.1.

A. MUIRHEAD,
Managing Director.

91, Petty France,
Westminster, S.W.1.
8th May, 1935.

Commissioners for the Port of Rangoon

WANTED, as CHAIRMAN of the COMMISSIONERS for the PORT of RANGOON, a gentleman with wide practical experience in port, railway or other business administration; under 45 years of age; salary Rs. 3,000/- a month rising by annual increments of Rs. 125/- to Rs. 3,500/- with a free house.

Applications should be addressed, not later than 31st May, 1935, to MESSRS. OGILVY, GILLANDERS & CO. (Reference R.136), 5, Lothbury, London, E.C.2, from whom further particulars regarding the appointment may be obtained by forwarding an addressed envelope to them.

Legal and Official Notices—continued

THE MADRAS & SOUTHERN MAHARATTA RAILWAY CO. LTD. invite tenders for:

2 LOCOMOTIVE ENGINES AND TENDERS, STANDARD 4-6-2 LIGHT (XB) TYPE, BROAD GAUGE.

Specification and Form of Tender can be obtained at the Company's Offices, 25, Buckingham Palace Road, Westminster, London, S.W.1. Fee ONE GUINEA, which will not be returned.

Tenders must be submitted not later than 2 o'clock p.m. on TUESDAY, 4th JUNE, 1935.

The Directors do not bind themselves to accept the lowest or any tender and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,

G. W. V. DE RHE PHILIPPE,
Secretary.

The Chinese Government Purchasing Commission

THE Commission is prepared to receive Tenders from British manufacturers only for the supply of:

- 4 Third Class Sleeping Cars.
- 5 Second Class Day Cars.
- 5 Baggage and Guard Vans.
- 5 Baggage and Mail Vans.
- 5 First Class Dining Cars.
- 5 First Class Sleeping Cars.
- 5 Second Class Sleeping Cars.

Tender forms can be obtained at the offices of the Consulting Engineers, Messrs. Sandberg, 40, Grosvenor Gardens, London, S.W.1.

A non-returnable fee of £2 10s. 0d. will be charged for a set of documents.

Universal Directory of Railway Officials and Railway Year Book

40th Annual Edition, 1934-35

Price 20/- net.

This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented.

THE DIRECTORY PUBLISHING CO. LTD.,
33, Tothill Street, London, S.W.1.

CONTRACTS AND TENDERS

The Birmingham Railway Carriage & Wagon Co. Ltd. has received an order for two first-class coaches to be fitted with J. Stone & Co.'s air conditioning equipment for the Federated Malay States Railways.

New Coaches for L.N.E.R.

The L.N.E.R. has placed orders with the Metropolitan-Cammell Carriage & Wagon Co. Ltd. and the Birmingham Railway Carriage & Wagon Co. Ltd. respectively for the construction of 25 vestibuled open third-class coaches.

The Hunslet Engine Co. Ltd. has received an order for one Consolidation type 3-ft. gauge superheated locomotive and double-bogie tender from the Peruvian Corporation. The engine, which is intended for the Trujillo Railway, is designed for coal burning and will have 18½ in. by 24 in. cylinders.

Steam Railcars for Tasmania

The Sentinel Waggon Works Limited has received an order from the Tasmanian Government Railways for two 250/300-h.p. Sentinel-Cammell steam railcars for the 3-ft. 6-in. gauge, each fitted with Sentinel-Woolnough oil-fired boiler and two standard Sentinel six-cylinder single-acting engines, one driving on to each bogie through a cardan shaft to a gearbox on the driving axle. The bogie at the boiler end on each car has three axles and the trailing bogie two. There is a driving compartment at each end of the car, with a full set of controls and gauges. The overall length of each car is 64 ft. 6 in., and accommodation is provided for 18 first-class and 22 second-class passengers with separate smoking and non-smoking compartments, lavatories and baggage space. Roller bearings are fitted throughout.

The Superheater Co. Ltd. has received an order from the Bengal-Nagpur Railway for a quantity of superheater headers and elements.

The Chinese Government Purchasing Commission, on behalf of the Ministry of Railways, China, and to the inspection of Messrs. Fox & Mayo has placed the following orders:—Fellows Bros.; Crab winches; Railway & General

Stores Contractors Limited; Manilla and wire ropes; Chas. Ross Limited; Two tandem wagon weighbridges each of 90 metric tons capacity.

Geo. Spencer Moulton & Co. Ltd. has received orders for approx. 6,000 indiarubber springs for buffers and drawbars for the Buenos Ayres Great Southern Railway and approx. 7,500 indiarubber springs for the Buenos Ayres Western Railway.

Tapered Roller Bearing Orders

British Timken Limited has received an order for 88 complete roller-bearing axleboxes for fitting to locomotives and coaches of the Entre Ríos Railways. Orders have also just been secured for four complete axleboxes for the Kiao Chow-Tsinan Railway, China, and for 80 bearings for the Belgian State Railways. Eight complete axleboxes have also been ordered from Lithuania. These orders follow those recently recorded in this column from the New Zealand Government Railways for 264 tapered roller bearing axleboxes.

It is reported that the Siamese Government has placed a contract for 1,704 tons of iron and steel bridgework required for the State Railways, jointly with the Nippon Ironworks, the Kawasaki Dockyards Company, the Yokogawa Steelworks and the Ishikawajima Shipbuilding Company, through Mitsui & Co., acting as agents at Bangkok. The value of the contract, which was awarded in international competition, is stated to be about £18,000.

Thos. Firth & John Brown Limited has received an order from the Central Argentine Railway for 229 steel locomotive tyres.

The Paterson Engineering Co. Ltd. has received orders for two water softening plants for the Bengal-Nagpur Railway.

United Water Softeners Limited has received orders for a total of 22 Zerolite type water softening plants for the Great Western Brazil Railway.

Thermotank Limited has received a further order from the L.M.S.R. for Thermo-Reg air conditioning equipments for 20 first-class sleeping coaches.

The British Thomson-Houston Co. Ltd. has received a contract from the Great Western Railway for the supply of Mazda lamps during the next twelve months.

Locomotive Turntable for Southern Railway

Ransomes & Rapier Limited has received an order from the Southern Railway for one 70-ft. diam. Mundt type locomotive turntable for the Southampton Docks Extension. The table is designed for a working load of 175 tons and a test load of 220 tons evenly distributed.

Nasmith Wilson & Co. Ltd. has received an order for six superheated boilers for F class locomotives for the Bengal North Western Railway and the Vulcan Foundry Co. Ltd. has received an order for six sets of cylinders and details, and motion parts for the same engines.

Leyland Motors Limited announces receipt of an order for 20 torque converters for Aktiebolaget Scania-Vabis.

The Associated Locomotive Equipment Co. Ltd. and Caprotti Valve Gears Limited have each received orders for cylinders and spares for their respective A.L.E., R.C. and O.C., and Caprotti poppet valve gears for the Bengal-Nagpur Railway.

The Secretary, Stores Purchase Committee, Government of Mysore, Bangalore, invites tenders, receivable by June 10, for the supply of machinery required for the Mysore State Railways' workshops during the year 1935-36.

Enquiry for Locomotives for South Africa

The South African Railways and Harbours Administration is calling for tenders, to be presented in Johannesburg by June 24, for the supply and delivery of four 2-ft. gauge locomotives, class NG/G 13 2-6-2 + 2-6-2 type. Firms desirous of offering locomotives of United Kingdom manufacture can obtain further details from the Department of Overseas Trade.

A number of metre-gauge diesel-electric locomotives is required for service on the Madagascar State Railways. Particulars can be obtained from the Service administratif colonial, Ministère des Colonies (Section technique), Paris. Tenders must be submitted by June 13.

May 10, 1935

Railway Share Market

The stock and share markets reopened on Tuesday under the favourable influence of the successful Jubilee day celebrations and the home railway market was for a short time the centre of some activity. Prices of London Midland & Scottish 1923 preference stock and the Southern preferred and deferred ordinary stocks rose on the prospect of a big increase in traffic receipts being obtained from the large influx of persons to London. The mid-week announcements bore out this expectation although they only reflected the pre-holiday figures.

All four railways reported increases. Southern's previous aggregate decrease is now extinguished, the L.M.S. has an increase to date of nearly six figures, the

Great Western decrease has been reduced by more than half, while the London & North Eastern is able to report an increase after a series of depressing returns. The improvement, as was anticipated, arises from the big increase in passenger traffic and, consequently, the Stock Exchange was not inclined to exaggerate the value of the returns. A substantial advance in the receipts of coal and coke and in goods would probably be more strongly reflected in the quotations for the junior stocks. There is now an inclination to regard prices of Southern deferred, L.M.S. ordinary and L.N.E. deferred as discounting the improvement in the position and realisations on the part of those operators who purchased when these stocks were at about half their

present prices, were in greater evidence this week. London & North Eastern issues have maintained some speculative attraction on the prospect of the rating decisions being upheld in the House of Lords, but influential members of the Stock Exchange are chary of taking any definite view as to the value of the revised rating assessments to the companies.

Foreign railway stocks have been quiet and the active movement in Argentine railway issues which followed publication of the recent Argentine Government Committee's report and recommendations has had a comparatively short life. Most prices came back, although some speculative demand for Cordoba Central first debentures caused the price of the stock to advance. In other directions Nitrate Railway shares were a feature on the announcement in the report that a revision of the company's tariff has been obtained.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1934-35	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices			
			Total this year	Inc. or Dec. compared with 1934		Totals		Increase or Decrease		Highest 1934	Lowest 1934	May 8, 1935	Yield % (See Note)
			This Year	Last Year									
South & Central America.													
Argentina													
Antofagasta (Chili) & Bolivia	830	5.5.35	£11,040	+ 1,329	18	£223,640	£230,200	- 6,560	Ord. Stk.	2634	19	18	Nil
Argentine North Eastern	753	4.5.35	8,604	+ 1,329	44	322,843	362,092	- 39,249	A. Deb.	11	67 ⁸	7	Nil
Argentine Transandine	111								Bonds	52	45	40	10
Bolivar	174	Apl. 1935	6,750	+ 350	17	26,300	27,050	- 750	6 n.c. Deb.	10	61 ²	10	Nil
Brazil									Ord. Stk.	1344	107 ¹⁶	13	31 ⁵ 16
Buenos Ayres & Pacific	2,806	4.5.35	94,796	+ 9,461	44	3,438,636	3,766,306	- 327,670	Bonds	81 ²	71 ²	Nil	
Buenos Ayres Central	190	14.4.35	\$100,800	+ \$7,000	41	\$4,524,100	\$4,381,100	+ \$143,000	Mt. Deb.	23	10	21 ²	Nil
Buenos Ayres Gt. Southern	5,085	4.5.35	131,047	+ 15,978	44	6,374,050	6,963,337	- 589,287	Ord. Stk.	35	22	23	Nil
Buenos Ayres Western	1,930	4.5.35	50,266	+ 2,621	44	1,984,146	2,344,402	- 360,256	Ord. Stk.	271 ²	181 ²	171 ²	Nil
Central Argentine	3,700	4.5.35	132,714	+ 20,329	44	5,291,211	5,776,878	- 485,667	Ord. Stk.	23	131 ²	15	Nil
Do.									Dfd.	14	7	7	Nil
Cent. Uruguay of M. Video	273	4.5.35	12,125	- 5,110	44	606,527	723,988	- 117,461	Ord. Stk.	151 ²	8	7	Nil
Do. Eastern Extn.	311	4.5.35	2,214	- 2,289	44	84,763	149,338	- 64,575	Stk.	—	—	—	—
Do. Northern Extn.	185	4.5.35	1,381	- 1,240	44	48,362	82,909	- 34,547	Stk.	—	—	—	—
Do. Western Extn.	211	4.5.35	497	- 355	44	33,553	69,394	- 35,841	Stk.	—	—	—	—
Cordoba Central	1,218	4.5.35	26,430	- 10	44	1,232,870	1,447,370	- 214,500	Ord. Inc.	6	3	3	Nil
Costa Rica	188	Mar. 1935	18,257	- 2,479	39	149,326	178,636	- 29,310	Stk.	304	231 ²	32	61 ¹
Dorada	70	Mar. 1935	11,900	+ 2,400	13	33,400	31,500	+ 1,900	1 Mt. Db.	103	95	104 ¹ ₂	55 ¹
Entre Rios	810	4.5.35	10,768	+ 1,905	44	537,297	538,102	- 805	Ord. Stk.	211 ²	12	121 ²	Nil
Great Western of Brazil	1,082	4.5.35	6,100	+ 800	18	168,000	162,700	+ 5,300	Ord. Sh.	7 ⁸	5 ⁸	2	Nil
International of Cl. Amer.	794	Mar. 1935	\$469,057	- \$83,653	13	\$1,307,612	\$1,523,084	- \$215,742	Stk.	—	—	—	—
Interoceanic of Mexico									1st Pref.	1/-	1/-	1/-	Nil
La Guaira & Caracas	225 ⁴	Apl. 1935	4,960	+ 1,490	17	15,500	14,380	+ 1,120	Stk.	1234	75 ⁸	81 ²	Nil
Leopoldina	1,918	4.5.35	19,943	+ 2,424	18	407,318	395,839	+ 11,479	Ord. Stk.	1458	7	51	Nil
Mexican	483	30.4.35	\$298,600	- \$60,100	17	\$4,143,100	\$4,012,800	+ \$10,300	Stk.	314	11 ²	11 ²	Nil
Midland of Uruguay	319	Apl. 1935	6,362	- 1,230	43	97,748	95,108	+ 2,640	Stk.	11	1 ²	1 ²	Nil
Nitrate	401	30.4.35	7,772	+ 4,294	17	49,694	58,815	- 9,121	Ord. Sh.	366 ⁵²	51 ¹	24 ¹	Nil
Paraguay Central	274	27.4.35	6,850	+ 1,810	43	221,780	142,490	+ 79,290	Pr. Li. Stk.	84	67	60 ¹ ₂	915 ¹
Peruvian Corporation	1,058	Apl. 1935	68,305	+ 18,338	43	625,461	556,896	+ 68,565	Pr. Li. Stk.	1412	8	7	Nil
Salvador	100	27.4.35	428,900	+ 4,750	4	910,352	916,933	+ 66,581	Pr. Li. Db.	75	70	71 ²	Nil
San Paulo	153 ¹²	28.4.35	34,080	+ 3,570	17	554,072	515,355	+ 38,717	Ord. Stk.	86	67	58 ⁸	45 ¹ ₆
Talata	164	Mar. 1935	6,054	+ 2,019	39	26,885	22,447	+ 4,438	Ord. Sh.	21 ⁸	17 ¹ ₆	11 ²	61 ¹ ₁₆
United of Havana	1,365	4.5.35	25,706	+ 8,163	44	1,032,172	854,340	+ 177,832	Ord. Stk.	6	2	3	Nil
Uruguay Northern	73	Apl. 1935	891	- 70	43	10,726	11,507	- 781	Deb. Stk.	614	3	41 ₂	Nil
Canada.													
Canadian National	23,735	30.4.35	916,163	+ 96,443	17	10,476,508	10,162,689	+ 313,819	Perp. Dbs.	7814	511 ²	591 ²	65 ¹ ₂
Canadian Northern									4 p.c. Car.	10412	9714	1011 ₂	31 ⁵ 16
Grand Trunk									Ord. Stk.	18616	111 ²	102 ²	Nil
Canadian Pacific	17,211	30.4.35	619,400	+ 73,200	17	7,285,000	7,349,400	- 64,400	Stk.	—	—	—	—
India.													
Assam Bengal	1,329	31.3.35	25,155	- 8,961	52	1,418,461	1,293,641	+ 124,820	Ord. Stk.	8812	72	83 ¹ ₂	39 ¹ ₆
Barsi Light	202	10.4.35	3,427	- 893	2	3,427	4,320	- 893	Ord. Sh.	10412	985 ⁴	616	—
Bengal & North Western	2,113	20.4.35	71,054	- 8,299	3	145,342	159,159	- 13,817	Ord. Stk.	29712	262	295 ¹ ₂	57 ¹ ₆
Bengal Dooras & Extension	161	13.4.35	4,337	+ 241	2	4,337	4,096	+ 241	Stk.	12514	124	124 ¹ ₂	55 ¹ ₆
Bengal-Nagpur	3,269	30.3.35	140,250	+ 1,467	52	6,006,525	5,825,371	+ 381,154	Stk.	10514	96	101 ¹ ₂	31 ⁵ 16
Bombay, Baroda & Cl. India	3,072	30.4.35	242,625	+ 8,550	4	704,700	702,075	+ 2,625	Stk.	115	108 ¹ ₂	114 ¹ ₂	54 ¹ ₆
Madras & South'n Mahratta	3,230	31.3.35	116,475	- 18,176	52	5,544,879	5,723,819	- 178,940	Stk.	131	122 ⁴	126 ¹ ₂	71 ²
Rohilkund & Kumaon	572	20.4.35	16,441	- 1,897	3	34,312	37,355	- 3,043	Stk.	263	250	287 ¹ ₂	59 ¹ ₆
Kenya & Uganda	1,625	Mar. 1935	243,384	+ 518	13	702,381	643,494	+ 58,887	Stk.	119	115	117 ¹ ₂	61 ⁵ 16
Mashonaland	913	Feb. 1935	105,711	+ 23,209	21	569,259	441,733	+ 127,526	B. Deb.	50	33	441 ²	77 ¹ ₆
Midland of W. Australia	277	Mar. 1935	12,005	- 1,485	39	122,226	122,214	- 12	1 Mg. Db.	101	915 ⁴	102 ¹ ₂	47 ¹ ₆
Nigerian	1,905	16.3.35	32,403	- 10,570	50	1,921,060	1,777,936	+ 143,124	Inc. Deb.	100	93	961 ₂	55 ¹ ₆
Rhodesia	1,538	Feb. 1935	179,770	+ 39,317	21	830,997	754,591	+ 176,406	4 p.c. Db.	1047 ⁸	971 ₂	1031 ² ₅	37 ¹ ₆
South African	13,217	13.4.35	570,103	+ 83,036	2	1,094,334	903,177	+ 191,157	Stk.	—	—	—	—
Victorian	6,172	Jan. 1935	834,638	- 17,346	30	5,586,612	5,388,619	+ 197,993	Stk.	—	—	—	—
Zafra & Huelva	112	Mar. 1935	11,058	- 362	13	32,962	34,675	- 1,713	Stk.	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1%.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value.